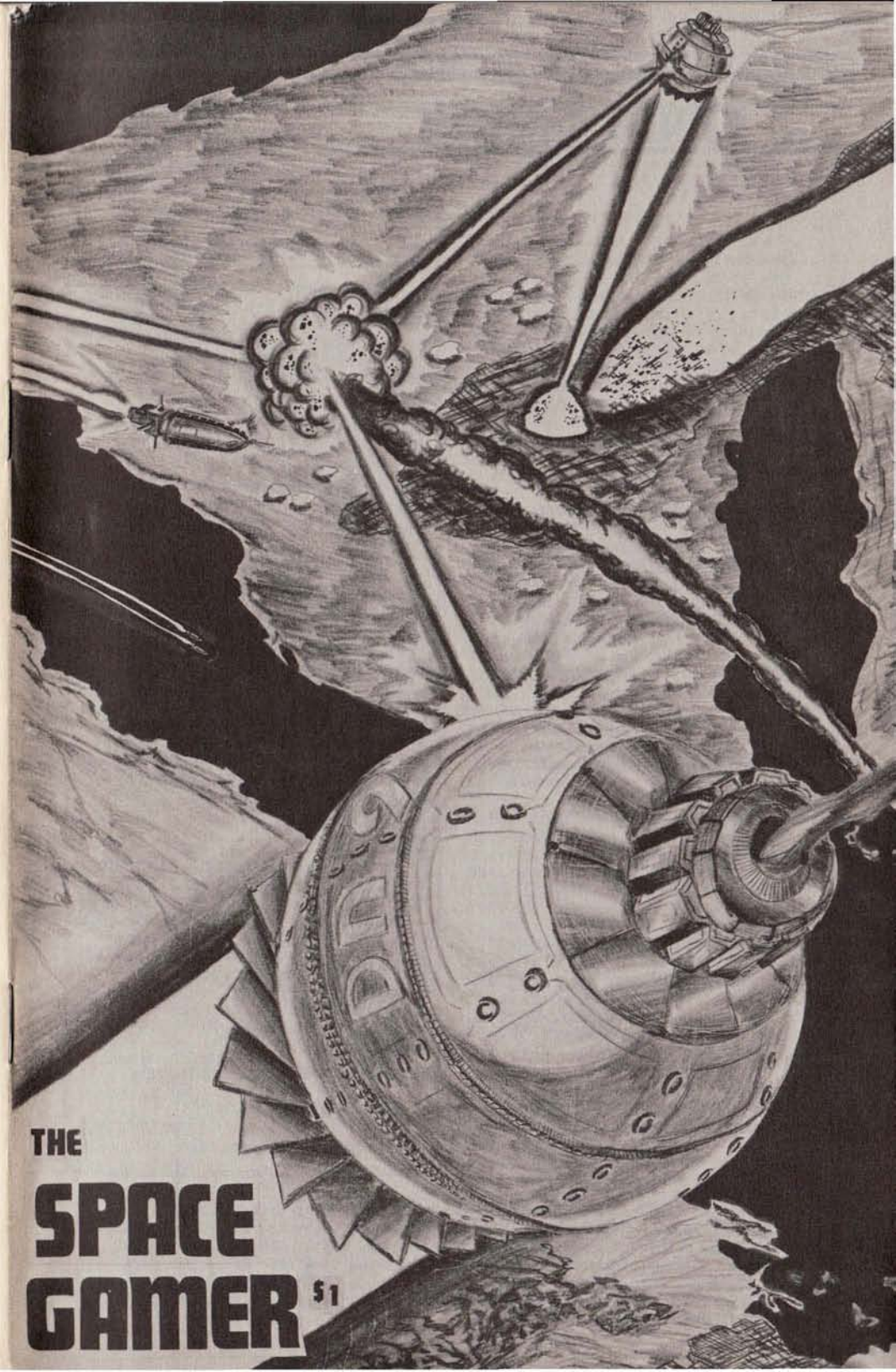
MONSTERS! MONSTERS!

Copyright © 1976, METAGAMING CONCEPTS



THE SPACE GAMER $1

the SPACE GAMER

No. 7

AUG.– SEPT.

IN THIS ISSUE

#

3...Creativity: Ptui!...HT

SPECULATIONS

4...Orbiting Colonies....Charles R. Bowles

8...The Space Warship....Scott Rusch

9...Game Design Notes....HT

REVIEWS

10...STARSHIP & EMPIRE....Kevin P. Kenney

11...ELDRITCH WIZARDRY....Glen Taylor

14...STARSHIP TROOPERS....Todd Roseman

15....THE YTHRI.....Tim Hawkinson

FEATURE

15...Intermediate Rules For STELLAR CONQUEST...Elton Fewell

19....Feedback & Games Ratings

20....1977 Metagaming Plans

FICTION

22....Dreadnoughts for My Lady.....Neil Shapiro

23....SCENARIO: The War for the Universe .....Dennis Colodiy

LETTERS

28

front cover: Winchell Chung

artists Rahman Tiffin
Jacquays Snyder

NEW FROM METAGAMING

GODS, DEMI-GODS & HEROES

Supplement 4 to the Dungeon & Dragons rules system. In the format of the previous supplements at 70 pages, 5½x8½.

Covers Egyptian mythology, Gods of India, Greek mythology, Celtic mythology, Norse Gods & Goddesses, Hyborean characters, the Elric stories, and Mexican & Central American Indian Mythology. The booklet is $5 for TSG non-subscribers and $4.50 for subscribers.

STARFARING

This game is designed by Ken St. Andre who designed our MONSTERS! MONSTERS!. STARFARING is a 54 page, 8½xll rules book. Contents includes Sequence of Play, The Universe, Scenarios, Building Ships, Creating Crews & Characters, Weapons & Conflict, Rewards, Stores, Psionic Powers, Hazards, Random Star Locations, Star Types, Star Systems, Planetary Types and Life Among The Stars. The rules are $6 for TSG non-subscribers and $5.50 for TSG subscribers.

STAR EMPIRES

This is the second rules book for the STAR PROBE game system. The initial booklet and map is available from us for $6 ($5.50 TSG subs)and is needed to use STAR EMPIRES. Allows the game to proceed to the formation of empires with fleet combats. The supplement is $4 for non-TSG subscribers and $3.75 for TSG subscribers.

WRITE: METAGAMING CONCEPTS
BOX 15346
Austin, TX 78761

Delivery in 4-6 weeks.

THE SPACE GAMER is published bi-monthly by Metagaming Concepts, Box 15346, Austin, TX 78761.

Copyright © 1976 by Metagaming Concepts. All rights reserved.

A six-issue subscription is $5, twelve issues $9, U.S.A. and Canadian postal addresses only. Contributions are solicited at the base rate of ½¢ per word cash or 1¢ per word purchase credit. Base art rate is $4 per page cash, $8 per page purchase credit. News items and product announcements accepted subject to editorial discretion.

CREATIVITY - PTUI!: EDITORIAL

A pox on education. With four percent of our population in college and each of us spending twelve plus years pursuing the holy grail of knowledge through education it's time to holler BULL. Knowledge may be powerful and the truth might point the way to freedom, but our educational system is a stupefying waste of time. This is a warning to all those who still struggle for betterment in our nation's schools and universities.

Truth #1: Schools don't exist to impart knowledge and understanding to students. Schools exist to provide jobs for citizens who can't hack it outside a safe bureaucracy. Schools exist to enrich construction firms. Schools provide another method of parceling out "pork barrel" dollars. Schools also provide a few upper-level administrative positions for the politically and socially faithful. Students are merely a necessary evil of education. You may learn a lot, but you are taught very little.

Truth #2: Creative thinking, education's chimerical goal, is an easy blind alley. Our society is glutted with those who want to be lauded for creative thinking. We have a glut of intelligentsia. Fortunately, a top electrician earns more than a humanities PHD, or we'd long since have thought ourselves into a crude, if literately verbous, Stone Age. Sophistry is a far easier goal for education to achieve than developing the ability to do, to produce.

Truth #3: A competent "doer" is worth a thousand good ideas. Our system is desperately short of people who know how things work and how to get things done. For every ten people capable of thinking great thoughts, there's only one guy who can turn out a useable, finished product. Great thoughts are worthless without competent implementation.

The Last Truth: Blame only yourself when you find you can't do something. If you've got four years plus college and can't manage your finances, blame yourself. If you end in a "nothing" job, blame yourself. If you've never accomplished any of your great ideas, blame yourself. If you're so confused you rationalize happiness for the cage you've made, blame yourself. You could have quit school and done something. You would have experienced a few failures and learned to do You could have gained knowledge without education. You could have been free instead of an extra in someone else's crowd scene.

Don't be misled. I've got sixteen years of education and a masters degree. It only fitted me for a bureaucratic, business or government, a pigeon hole. This is all hindsight, coming after years wasted in classrooms. It took a masters to work off the education compulsion laid on me even before kindergarten. Consider this a voice from beyond come back with tales of the bramble bushes in a promised land.

You bet I'd do it differently! First, I'd drop out of high school at the legal age. Then I'd get as many different jobs and as much travel as I could. Hopefully, I'd learn how to do as well as think. I'd read all I could and experience many different people. I'd question, work hard, and try to understand all I saw.

That may sound drastic, but it could leave me no worse off than I am with all those years as an adult in classrooms. If my children want to quit school, I'll quietly applaud. If they quit school and learn to thirst for knowledge and experience, I'll be proud. It's a more dangerous way of life for sure--less security and certainty. But, as the saying goes, you can't take it with you. All you have in life is what you are and what you can do.

A job can vanish. Finances can crumble. If you're only a thinker, you go where the tide washes you, thinking creatively all the while, no doubt. If you are a doer, you build a raft, learn how to swim and are still yourself.

I guess that about says it. Hooray for knowledge, experience and doing. A pox on education, creative thinking and safe routines. Trust yourself to be a winner by learning and doing. Depend on others to teach you thinking and be a loser.

By the way, how often do you feel absolutely bored and wasted sitting in some classroom? If you're thinking it may not be worth it have more faith in yourself, you're probably right.

Howard Thompson

SPECULATIONS

ORBITING COLONIES

by Charles R. Bowles

Visiting and colonizing other star systems requires technology that we do not presently have and probably will not have for a significant period of time.

Except for possibly Mars and Venus even the planets of our own star system seem too hostile for colonization even for the distant future. The technological requirements for transport to and maintenance of colonies on Mars alone are staggering. However, establishing colonies on the moon, in earth orbit and in solar orbit requires no significant technological development, only national and economic commitment. With such a commitment we could see earth-orbiting colonies before the year 2000 and solar-orbiting colonies two or three decades later.

In less than four years the Space Shuttle is scheduled to go into service. The Space Shuttle is a significant change from previous space projects in several ways. First, the shuttle and its booster rockets are reusable. Only the large external fuel tank is expendable. This cuts the cost per pound of putting a payload into orbit dramatically. Also, the shuttle is the first manned program to actively sell missions to other government agencies, other governments and private corporations, domestic and foreign, in an attempt to broaden the economic base for space development. It is also the first vehicle designed to recover and return satellites to earth as well as place them in orbit. The 60,000-pound orbital payload, being utilized for multi-national scientific and economic projects from 1980 to 1991, will go a long way in laying the technical experience needed before large, permanently manned satellites can be built. The shuttle will also help convince the taxpayers and voters of this planet that space programs are reliable, profitable, but most of all, practical.

Another project seriously being considered could move us rapidly into the giant manned-satellite era. NASA is committing tens of thousands of dollars to feasability studies on orbital solar power stations. The first working-scale model of the Satellite Solar Power Station (SSPS) is scheduled for launch in 1978. The proposed design of the full-sized SSPS calls for two adjacent solar collectors, each 97 square kilometers with 32 square kilometers of solar cells. Between the two collectors would be a dished-shaped transmitting antenna one kilometer in diameter aimed back to earth. The receiving antenna grid on the ground would cover 55 square kilometers. The station would deliver to the ground power system 10,000 Mega Watts or about three percent of the present U.S. electric generating capacity. Because the earth's axis of rotation is tilted relative to the sun, an equatorial synchronous orbit would keep the SSPS in sunlight and operating twenty-four hours a day year round, except for a few hours at the vernal and autumnal equinoxes. Also due to this equitorial synchronous orbit, the SSPS would appear to be a fixed point in the sky and one aimed at a ground receiver would never need changing. To prevent atmospheric and meteorological interference the transmitter will probably operate in the microwave radiation range. Although strong security would be observed around the receiving antenna, to prevent animals or people straying into the area, even exposure for several days at the center of the receiver antenna would not prove fatal.

THE POWER CONVERSION efficiency is a critical factor in the SSPS due to the fact that most efficiency losses result in the buildup of heat which is very difficult to get rid of in space. Only twelve percent of the solar energy hitting the solar cells would be converted into electricity. The efficiency drop from the time the electricity leaves the solar cells until it enters the commercial power grid on the ground would be only 40%. Expected technical advances should bring these losses, due to atmospheric causes and the conversion of electricity to microwave and back to electricity, etc. down to 23%.

That the SSPS can be built and utilized with present technology is not questioned. The question is the cost. The best estimate of capital costs of the SSPS is $1720 per kilowatt with expected developments, but the same source gives a possible low cast of $890 per kilowatt and a possible high cost of $2940 per kilowatt, all based on the utilization of the reusable space shuttle during construction.

A major consideration in cost is the expense and availability of alternative energy sources. The oil shortage, the resistance of the western states to having a portion of their mountains relocated due to oil shale and coal mining and the increasing resistance to rapid proliferation of nuclear power plants all make the SSPS costs appear more practical.

A proposal by Physics Professor O'Neil of Princeton to build a large permanently-manned space colony to assemble and maintain large numbers of Satellite Solar Power Stations has received attention and support (Analog July 76. Smithsonian Feb. 76). The concept eliminates the cost of resupplying the SSPS assembly crew with food and oxygen and the cost of rotating them back to earth for rest and recreation by creating an almost self-sufficient colony in space.

THE COLONY would be located in space at a point called L5, roughly at the apex of an equilateral triangle with the earth and the moon at the other two apexes. The proposed colonies came originally in two sizes: both colonies were a pair of long cylindrical rotating tubes connected by cables. The small cylinders would be 200 meters in diameter and one kilometer long holding 10,000 people, and the larger cylinder 600 meters in diameter by three kilometers long holding 100,000 people. The cylinders would enrich moon soil for raising some crops, homes, streets and even rain clouds. The sun would be reflected into the cylinder by long adjustable mirrored panels which would allow exact control of the light and dark cycle.

Although some of the construction materials for the colony would come from earth, most of the material needed would come from the moon. Water and oxygen would come from the heating and chemical treatment of moon rock, and soil for crops would come from moon dust. Theoretically, getting material to L5 would be far easier and far cheaper from the moon than from the earth. First, moon rock would be collected and melted into a hard block using a solar reflector. Then the blocks would be loaded into a wheeled cart and propelled down a high-speed monorail until the cart reached escape velocity. The cart would then flip its load skyward, slow down and then return to the point of origin for another load. The rock payloads would travel to a point in space from which they could be towed to L5.

PROFESSOR O'NEIL offers many variations on the two basic colony models. When the SSPS concept came into prominence, O'Neil modified the small colony design (10,000 people) to allow it to help build and support SSPS. He envisioned a high initial capital investment to build the first colony resulting in a greatly reduced unit cost for the manufacture of a very large number of Satellite Solar Power Station and more colonies if needed or desired.

The entire project could be implemented using the space shuttle and a high-lift capacity modification of the shuttle booster system. The price tag for the first colony and the first SSPS is given by O'Neil as $160 to $200 billion over a period of approximately 25 years resulting in the completion of both by the year 2000. This program has received interest and even support from such influential men as Senator Morris Udal.

In addition to the SSPS, there are many manufacturing processes that are far easier to do in space, and others that can only be done in space. The foremost advantage of space manufacturing is the lack of natural gravity. In zero gravity mixtures of fluid state chemicals with different densities will not separate into different layers, bubbles will not migrate to the surface of liquids, and structures that are far too flimsy to exist in the earth's strong gravitational field can be easily produced.

Several of the theoretically most-promising semiconductors in microcircuitry cannot be produced for experimentation on earth, because the compounds making them up are so different in density that they will separate into layers dur-

ing the molten-mixing stage before they can be cooled. (Microcircuitry may be one of the first space manufacturing industries due to the very high value to weight ratio of the product.) Metal alloys never before possible could be produced in space. On earth, gas bubbles injected into molten steel migrate to the top of the cooling liquid before it can harden. However, in zero gravity the bubbles would not migrate, resulting in a high-strength light-weight steel which would look a little like plastic foam.

WHY MANUFACTURE the individual compounds of a SSPS heavy enough to withstand the g-forces of getting them into orbit when you could put the partially-processed material into orbit and then finish the manufacturing process to produce a far lighter and flimsier structure? Once the SSPS is in place there will be no strong forces applied to it in the form of wind or gravitational forces. Why not manufacture the solar collector's metal support frame and the transmitting antenna out of metal manufactured in space many times thinner than the thinnest aluminum now manufactured? A program currently under development to produce solar cells in a continuous ribbon process offers the possibility, even probability, of cutting the cost of solar cells to a small fraction of the former cost. Why not use this ribbon process in space and reduce the thickness of the solar cells by a thousand times? Extruding molten substances of any composition into super-thin sheets is very difficult on earth. If the extruder goes faster than the mechanism pulling the extruded sheet along, the molten sheet will build up thicker than desired. If the extruder goes slower than the mechanism pulling the extruded sheet along, the molten sheet will tear and separate. In space the molten estruded sheet or ribbon will drift effortlessly through vacuum until it has cooled and gained strength. Then it will be gently manuevered into the desired position.

THE ABILITY TO PRODUCE and alter g-forces is an important part of the advantage of zero-g. By increasing or decreasing the spin of a portion of the manufacturing facility, the g-force can be varied from zero to several g-forces at any point in the manufacturing process. Also there should be a g-value between 1/8th and 1/4th earth's gravitational force, which would be the most productive for physical labor. The force would be strong enough to allow a man to hold his balance while walking, working and lifting, but weak enough to allow the man to lift several times his own weight with relative ease and move about doing his job with speed and ease.

The void of orbital space would be an advantage to many industries both as an infinite source of vacumm and as an area without life forms or population. The vacuum is better than any that can be produced on earth, and is free to use in getting rid of unwanted vapors and liquids without interference from any Environmental Protection Agency. Industrial processes such as the final stages of plutonium manufacture, and scientific research such as the advanced experimentation with genetic modification of bacteria and virus are inherently dangerous to all life forms. Millions are spent on safety systems, backup systems and more backup systems to prevent contamination.The need for most of these backup systems would be reduced or eliminated by a space facility in earth-orbiting or luna-orbiting position. (The TV series 1999 is based on the use of the moon as a dump for dangerous radioactive waste.)

The free energy of space would be a tremendous advantage to most industries. The atmosphere filters out most of the energy from the sun. The U.S. Southwest on a clear summer midday receives only about 11% of the solar energy that an equal-sized area in space would receive. Solar cells would provide ample electricity for most industrial applications in space. High thermal energy would be provided for melting, fusing, large volume welding, etc. by a large parabolic mirror made of thousands of yards of super thin metal foil.

This free energy would also supply food. Soil crops, or hydroponics, are the normally proposed ways of feeding the population of space colonies, but there are many other possibilities. Plankton and algae might prove to be the ideal intermediate in the food chain... Algae or plankton could be pumped through fairly small plastic tubing extended out into space like a massive spider web. Materials imbedded in the plastic during manufacture would filter out or reflect most of the harmful radiation, but not the radiation beneficial to algae growth. Due to the very warm temperature, and high sunlight exposure twenty-four hours a day, algae would give a very high food production rate. (Algae forms account for 90% of the photosynthesis on earth, so why not for oxygen and food in space?)

In the more distant future the food may be totally or partially synthesized. Photosynthesis results in the absorption of light to bond carbon dioxide and water onto a hydrocarbon chain with the liberation of oxygen. Carbon dioxide and hydrogen gas heated over a catylitic plate of copper oxide and chromium oxide is the way more than 90% of the methyl alcohol produced in the world is made. From the methyl alcohol starting point or several other starting points virtually all the compounds found in foods can be synthesized. The present complication is the high cost due to the complexity of the processes and the large amount of energy input. But in space, with the limitless supply of energy and the advances of technology with time, the total synthesis of food may become the most efficient and most economical.

Orbiting colonies may become the home of earth's excess population not due to the need for room or the problems of industrial pollution, but because the colonies might be the only place the extra mouths can be fed.

With so many manufacturing advantages, limitless energy and no absolute limit on food production, orbital space seems a very promising area for growth. Indeed, with many prominent politicians already speaking of the future in terms of "Diminished Expectations," space may become the only area open to significant economic and population growth.

WHEN SPACE COLONIES become large enough in size and diversity to be totally independent of earth both physically and emotionally, they might switch from earth orbit to solar orbit to mine the astroid belt or even to the orbits of the other planets in our system.

Even on Mars any human population will probably live above the planet. Mars will have no stored energy like Earth has; no oil, no coal, no natural gas and no water to cool nuclear reactors even if radioactive minerals were plentiful. Solar energy will be available only during daylight hours, whereas, orbiting colonies above Mars will have solar energy continuously.

The development of orbital colonies within our solar system is not only scientifically feasible and probable, but also a very interesting game situation.

The population of these colonies will be the more adventurous and the more technically skilled. The colonial founders will feel an allegiance to their former home, be it earth or an earlier founded colony, but as time passes and new generations are born aboard the orbiting colonies old allegiances will weaken.

With this view of the future in mind, the space gamer can create his own hypothetical situation for revolt, war or aggression for reasons of mineral rights, unpaid taxes, unpaid loans used to build colonies or whatever. Orbiting colonies would make a very interesting objective for war games.

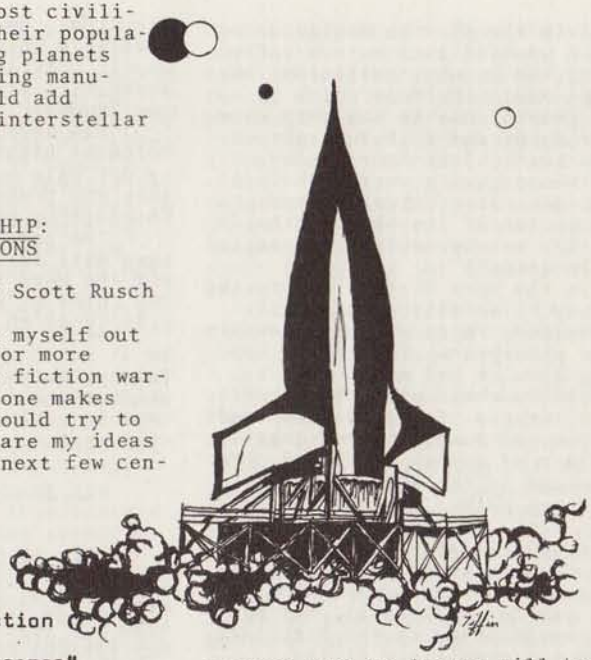
Who needs strange creatures invading from a distant star system? Man has always found a reason for war. Imagine wars between earth and its orbiting colonies of Earth and Venus against the surface and orbital colonies of Mars and the rest of the planets and astroid belt.

Colonies could be soft and easily destroyed or protected by force fields making them a very difficult target. They could have a fixed orbit or a variable orbit or even be able to shift slowly from one planet's orbit to another planet's orbit, makeing themselves very difficult to locate.

The movement of the entire manufacturing capacity of a civilization or nation (the equivalent of a nation, anyway) from the orbit of one planet to another within the solar system would prove an interesting factor in wargaming.

And for the gamer who must have interesting conflict, consider the development program we have laid out for our civilization for the next five to ten decades in orbital colonies. Is it not likely that other space civilizations are going through a similar orbital colony growth phase? The exploration of stellar space may

show that many, even most civilizations have more of their population living on orbiting planets than on planets. Orbiting manufacturing colonies would add significantly to even interstellar warfare games.



THE SPACE WARSHIP: PROGNOSTICATIONS

by Scott Rusch

In TSG #3 I stuck myself out on a limb by calling for more science in our science fiction wargames. I believe when one makes such statements one should try to back them up, so here are my ideas on the warship of the next few centuries.

"more science in our science fiction wargames"

First off, I am going to work with extrapolations of present technology and with devices which one can reasonably expect will be invented. There will be no gravitic drives or impervious Puppeteer hulls. There are possibilities enough to explore without considering them.

The first problem is the ship's drive. Low acceleration (i.e. Ion) or high fuel consumption (i.e. Chemical) drives will probably not be used. This leaves various fission and fusion engines. The NERVA engine is not efficient enough to be much good. The DUMBO and gaseous fission engines, on the other hand, will be more useful, as they heat the fuel better. The DUMBO is, at the present time, the most practical of the fission engines available. (See Kingsbury's article in the December 1975 ANALOG.)

As for the fusion drives, the Orion nuclear pulse drive (propulsion by a series of small nuclear explosions) or a drive as yet undesigned would heat fuel as a fission drive can do. Both can give us the high accelerations needed for warships to allow them either to escape slower enemies or to pick the moment of attack.

THE NEXT CONSIDERATION is weapons. I do not believe energy weapons such as lasers will be used at anything but close (zero to a few thousand miles) range. Lasers are pinpoint weapons, and hitting a tiny moving speck tens of thousands of miles away is quite difficult if not downright impossible. The problem is even worse if you're so far away that you have time-lag problems, not to mention the loss of power as distance increases. Close only counts in horseshoes, hand grenades--and nukes.

Speaking of the last two, I can see the need for spread weapons--weapons that extend a killing zone into which an enemy ship can fly. Chemical shells, machine gun bullets, and shrapnel can be used to damage ships without necessarily killing anyone. The problem is that a ship has to carry a lot of them to do any good. Self-controlled mines might carry the stuff; you fire the mines into the path of the enemy vessel and let them do the shooting at a closer range.

Such weapons summon the problem of electromagnetic shields. Most atomic and subatomic particles (except for photons) have some anomaly, such as charge or spin, which would allow a field to toss them aside. Such fields, if developed, would not only protect against machine gun bullets and shrapnel, but would also protect against many of the particles put out by a nuclear explosion. Only gamma radiation would not be affected, and gamma rays are deadly. Thus, I predict gamma rays, produced by nuclear shells and missiles, will be the killers of space warfare. I can think of nothing that can be carried by a spaceship that will totally stop them, though a lead "storm cellar" may help.

IN ORDER TO fire on each other, however, ships must first be able to detect one another. How to detect something tens of thousands of miles distant that doesn't want to be noticed? Electronic counter measures are improving greatly in our time, and optical detection seems unlikely. I suggest the possibility that most battles will be fought at a range of only a few thousand miles apart.

As for ship design, I picture the control station and some life support in the "storm cellar" buried deep in the center of the ship. (Kirk's bridge should have been shot off the Enterprise a long time ago.) More life support and living quarters will be outside the "storm cellar," and the fuel tanks will be yet further out. A launch cannon for missiles and shells will be mounted in the bow, the drive in the stern. Landing boats, short-range weapons and detection equipment will be in blisters covering the outer hull. The ship itself will probably be mirrored or painted in anti-radiation white. A thin shell--designed to give a small radar cross section and painted dark--will cover the entire ship. The crew will be as small as possible, and no doubt a group of these ships will operate from a commodious mother ship. They may also be used on independent missions.

GAME DESIGN NOTES

by Howard Thompson

(This is written to upgrade the design quality of games submitted to Metagaming Concepts for possible publication - ed.)

Designing a good game is simple, if you're willing to put in nine parts sweat for every part of genius. Basically, you start with a design concept and some criteria and/or constraints for what you would like the game to achieve. For example, THE YTHRI was conceived as a tactical space combat and planetary assault and conquest game. It was to be a fairly simple, 2-player game with short playing time. TY required some relation to Paul Anderson's book, The People of the Wind, though the relation would be fairly abstract.

Starting a concept with criteria/constraints sounds like an academic course-work exercise without real meaning. But, you'll find having a central concept an invaluable backstop when deciding on design detail. As your game design progresses the initial concept will evolve. Don't be afraid to alter that initial concept if detail design work and play-testing reveal some initial bullshit.

What should the final game look like? Well, that depends on what you wanted. But, the rules are going to be the guts of the game. The rules should have:

1. A brief introduction that gives potential players a fair overview of the game,
2. A description and identification of all play components that also indicates their function,
3. A set-up-for-play section that tells players how to set up the game for play and how to start play, and
4. A sequence-of-game-events that tells how to play in one, two, three type steps,
5. A section describing each game event in detail. Ideally this should include:
   (a) general statement of what the event is, does, and how conducted,
   (b) a sequence of sub-events if the major event has different activities that need to be phased,
   (c) a statement of specific rules applicable to the event that covers necessary actions, prohibited actions, and optional actions, and
   (d) an example or two, pictures are ideal, that portray the basics of the event.

A good rule to use for an event is that an event is a series of player decisions and actions that logi-

cally related occur simultaneously in game time. Sub-events are useful to explain a complex event that is an indigestible lump as a whole, or when a sequence of sub-actions in an event require some to be done before, others.

6. A section describing how you win and/or score the game, and
7. All other sections not covered in one thru six. These may be optional rules, etc. But be sure any miscellaneous rule item doesn't belong in one of the other sections. For instance, description of how map terrain affects play counter movement could be classed in the section describing play components when the map is described, in the section covering events or perhaps in both places.

That is a brief introduction into the area your rules should cover. You may structure them differently, but the same information had better be clearly identified somewhere.

Miscellaneous Items: In addition to the summary above, one concept I've found useful is that of entities and attributes. For example in STELLAR CONQUEST the entity class warships had attributes of speed, range, communications, fire power and resource cost. The entity colony had attributes of population, industry, defensive missiles and controlled environment technology where applicable. The key to defining entities and attributes is to decide which items are subordinate to other items, similar to using structured programming when writing a computer program.

Another useful tool is to graphically flow-chart sequence of game events: draw a map of all decision points and actions in the game. Creating such a flow-chart with yes/no criteria defined for every possible action, you will quickly see where unresolved decision points are.

You must strive to cover every possible outcome of a decision in the rules. Even so, you'll miss things. In STELLAR CONQUEST a rule states the player withdraws ships surviving a combat to any hex adjoining the contested star-hex. The rule is very clear, except that in one case stars occupy adjoining hexes. If there was combat on both stars, withdrawing ships could conceivably bounce back and forth from star to star. A rule to avoid this single oversight could simply specify withdrawal to non-star hexes only.

As brief as this analysis has been, it should give budding designers an idea of what we look for in submitted games. It's frustrating to get an innovative and well-written game in the mail that is too poorly organized rules wise to play. It isn't fair to publish a game that is only a guide for experienced gamers who can make their own thing of it. Each game should be able to stand alone, should be capable of play by a raw, though intelligent novice.

Two last words. (1) Don't take for granted that readers will understand what you mean if you don't spell it out. (2) Don't be surprised if you get bogged down, going round in circles with your game.

One thing that helps when you start thrashing is to quit and set the game aside. Leave it a few weeks, and in my experience, when you start again you will find solutions to most of the hang-ups. STELLAR CONQUEST was revised extensively twice. It's no exaggeration to say the game was 80% designed three times, a fact which accounts for most of it's success.

REVIEWS REVIEWS REVIEWS

STARSHIP & EMPIRE: A BETTER SPACE WARGAME

by Kevin P. Kenney

STARSHIP AND EMPIRE is a multi-level combination of many of the ideas present in other S-F games cleaned up and merged into one of the better of the current onslaught of space/naval wargames. It takes the fleet maneuvering of STARFORCE on a stategic scale, adds a combination of EMPIRE I's and TRIPLANETARY's movement system for tactical purposes, and then uses a FORMALHAUT II--type combat system while miraculously sidestepping the problems of each (well, most of them).

The components are of reasonable if not exceptional quality. Of the 480 counters provided 60 are blank, leaving 420 fleet, ship, cargo pod and missile counters all of which have black printing on a one-color background (red, yellow, green and blue). The game supplies four strategic scale maps, each 16"x16" with a 10 unit cube of artesian points on it. Each cube contains 14 stars capable of life-support on one of its planets. (According to the rules the scale of these maps is such that there is a stellar mass on each coordinate point, an obvious attempt to explain why all of the stars shown have habitable planets.) Also included is a 22"x35" tactical map, white, on which the only terrain is a single planet. In addition S&E has star fleet composition sheets, ship characteristic sheets, a CRT/ship characteristic card, a sixteen-page illustrated rulebook with errata sheet and a cover sheet, all in an oversized zip-lock bag. The entire design displays professional artwork, from the abstract ship symbols on the die-cut thinboard counters to the rulebook cover design. The only lapse of quality is in the planet hex of the tactical map, which conjures up visions of STAR RAIDER.

AT THE STRATEGIC LEVEL, good pseudo-3D movement system is used. Simple rules give the feel of point-to-point direct jump movement without getting bogged down with true distance charts. Movement is simultaneous and easy to plot, with some semblances of limited intelligence. (You know where the enemy's fleets are, but not their composition.) The four strategic maps are used singly or together, positioned at the player's whim. (Yes, even vertically!) I'll pass on guessing the number of possible permutations, I'm no math major.

All combat is at the tactical level. Movement is still simultaneous, but now only on a two-dimensional hex-grid. You coast at your previous course, unless you accelerate at a cost determined by your ship type and cargo status. This requires the expenditure of the energy points you are allotted each turn, which also powers your weapons and screens as well as allows you to launch missiles. Furthermore, to transfer energy points between these tasks crew units must be available. And as a topping there is a hyperdrive, strategic-movement unit, which doubles the power within itself each turn until it causes the ship to make a jump to an adjacent square on the strategic map. To keep this from occuring too soon power can be taken from the unit to give you more than your normal allotment of power for a turn--if sufficient crew units are available.

COMBAT IS by a differential system--attack factors minus defense factors— with geometrical increments (2,4,8,16). The range of a ship's guns is 10 range attenuated hexes. Damage is taken slowly by energy and crew units: the ship characteristic sheets having reasonable space for all such changes (as well as space in which to plot ship movement). Torpedoes have some homing capabilities as well as the power to annihilate the weaker of the four ship types, but they are few and far between and thus better used to soften up the higher class ships for your own lesser ships to have a chance with. (No more does the strongest, undamaged ship in the game go out because of a single torpedo volley!) Victory is on a point ratio system of which it is fairly easy to keep track. Seven scenarios are provided, including ones only using one of the two game levels. The single strategic level scenario uses an abstracted combat system.

One note on the rules. Though generally clear and complete (after the errata sheet changes), the diagram of the gravity well effects example is deficient, as well as having an uncaught error in the text.Apply a little logic and draw a few extra lines in the diagram and the situation clears up nicely.

STARSHIP AND EMPIRE is available for $8.75, including postage from R-Squared Games, P.O. Box 8314, Salt Lake City, Utah 84108. If you like TRIPLANETARY, and like long games, (though short ones are included) you should try it.

ELDRITCH WIZARDRY: A SUPPLEMENT TO D & D

by Glen Taylor

ELDRITCH WIZARDRY is the third supplement to DUNGEONS AND DRAGONS, the classic fantasy role-playing game by Gygax and Arneson. It follows the precedent set by GREYHAWK and BLACKMOOR, the first and second supplements, introducing new material to the basic game system for a more intricate, complex playing experience. Like the other supplements, the new material in EW is organized around the original format for easy absorption into the basic structure of the game.

PSIONIC ABILITIES is the first major addition to EW. Any human of any alignment or any character class, except monks or druids, may have psionic ability. If the character's intelligence, wisdom or charisma is at least 15, he has a 10% chance of having psychic potential. If this chance comes out percentile dice are then rolled for his psionic potential. This procedure governs both the chance of gaining new psionic abilities as one advances in level and one's psionic attack strength.

Each of the character classes has its own list of psionic abilities which it may gain. The catch: when you develop the hidden powers of the mind you lose other things, depending on your character or class. Psychic abilities are assigned randomly until someone reaches a high enough level to be sure of getting a new ability when he advances. At this point he may choose his ability. The list of psionic abilities is long and varied, and most of them are very useful.

Besides regular psionic abilities, EW offers psionic attack and defense modes of various types. Only very powerful psychic types may attack non-psionic creatures. The supplement includes many charts for psionic combat. Each attack and defense mode is a distinct combat ability, not just a variation on the same theme. Psionic energy is expended each time any ability is used.

In addition to Psionics ELDRITCH WIZARDRY introduces a new character class: the druid, a priest of a neutral-type nature worship. First introduced in GREYHAWK as monsters, Gygax and Arneson here expand them into a new clerical subclass with their own spells, abilities and hierarchy of levels. Also newly introduced are two types of monsters. The first is the demon. There are seven distinct types of demons, each progressively more powerful, chaotic/evil creatures, plus two ultra-powerful demon princes. All but the weakest are psionically endowed. The second type have psionic attack capabilities and/or astral or ethereal ones, such as Brain Moles, Thought Eaters, Su-monsters, and Intellect Devourers. Unlike the monsters in BLACKMOOR, most of which were aquatic, most of these can be used in standard dungeon or wilderness settings.

ALSO INCLUDED in EW is a modified combat system which takes into account a player's armor type, readiness of weapons, encumbrance, level of spell being used, whether or not he was surprised and his dexterity in figuring at which point in the melee he can attack or cast a spell. Each melee round is divided into six movement segments, and a pre- and post-movement segment. Some may find these stages too cumbersome, but I find them much more logical than simply rolling a die to see which side gets to strike first.

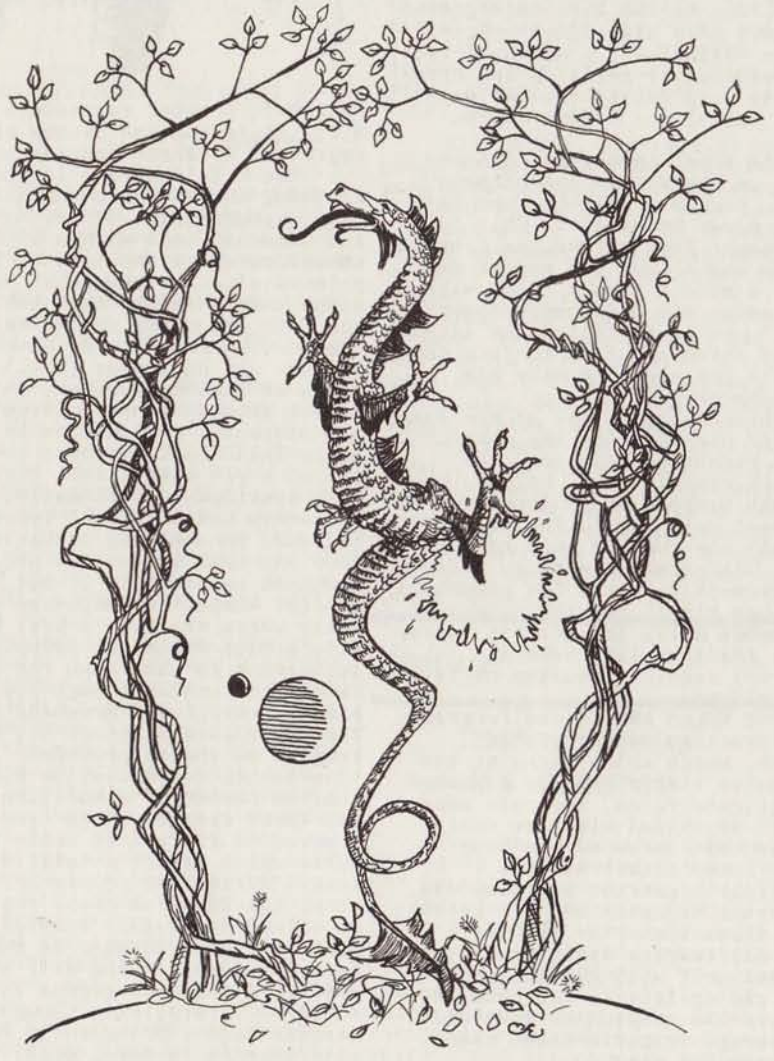
Finally, this supplement offers an extensive section on artifacts designed to put some of the mystery and danger back into D&D. I feel they have succeeded admirably. The Artifacts and Relics have tremendous powers unknown to players; they must rely upon rumor or trial and error. It is nearly impossible to foist one upon a non-player character and come through with a whole skin! There are over twenty artifacts in the supplement, with their suggested powers listed. In addition, there are tables containing a virtual cornucopia of possible powers of the things, and referees can freely add to or alter these to make their own artifacts and relics. This section should keep players guessing for a long time to come.

EW also adds an element sorely needed--new wilderness encounter charts encompassing the new monsters and character classes introduced in the previous supplements and in several issues of The Strategic Review, TSR's now-defunct magazine. New dungeon encounter charts were provided in GREYHAWK, but no new wilderness tables. The new tables produce the very desirable effect of having some types of monsters substantially more common than others, and since this is achieved by duplication of types on the same table, players can freely alter anything with which they don't agree, as well as insert their own fiendish monster types into the charts.

THE PHYSICAL QUALITY of ELDRITCH WIZARDRY is excellent. The cover is in color, a first for TSR, and portrays a human sacrifice. The paper is not the glossy type used in GREYHAWK, but the artwork is superb, including one very amusing picture of--well, see for yourself.

All in all, ELDRITCH WIZARDRY is well worth the admittedly high price of $5.00. It's as good as GREYHAWK, and that's saying a lot. It should put the spice of danger and unpredictability back into D&D, and partially satiate that hunger for new material that typifies D&D enthusiasts everywhere.

Gary Gygax and Brian Blume designed ELDRITCH WIZARDRY with help from many others. It is available for $5.00 ($4.30 for TSG subscribers) from Metagaming Concepts or TSR.



STARSHIP TROOPERS: RECREATING HEINLEIN's BUG WAR

by Todd Roseman

SST is a recent Avalon Hill release which faithfully recreates the heroic battles of the Terran Mobile Infantry as described in the classic Robert Heinlein novel of the same name. For the three people who have not heard of Starship Troopers, it is an SF novel chronicling the "Bug War" (2156-2159 AD), during which the Terrans combated two co-belligerent space empires: the Bugs (or psuedo-Arachnids), which lived in the huge underground complexes of a hive-like society; and the "Skinnies", a humanoid race which eventually realized the error of their ways (after several major Terran raids) and became Terran allies.

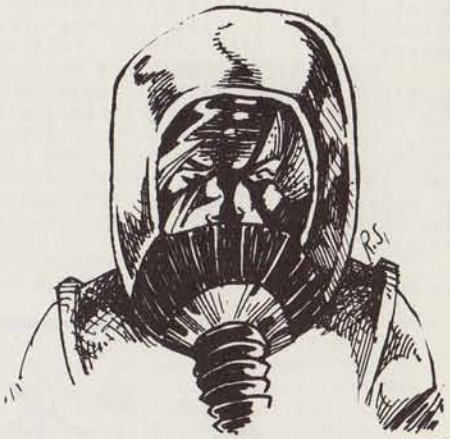
The novel (and game) concentrates on the Mobile Infantryman (M.I.). Each M.I. fights from inside a power armor suit. This suit is stronger than a tank, as flexible as skin and allows the wearer to travel a mile a minute. Even with these suits and advanced weaponry, the M.I. still fulfilled the age-old role of infantry: face-to-face combat with the enemy to make him surrender or die.

Physically, SST is of the same polished quality that has characterized recent AH releases. The counters come in seven colors, using both symbols and silhouettes to represent unit types. The counters are well die-cut and easy to understand, illustrating attack, defense and movement factors. The gameboard is rather bland, but the nature of the combat makes the terrain appropriate. Additionally, several scenarios require ignoring certain terrain types.

THE RULES ARE of the Programmed Instruction variety, a'la Tobruch, which makes learning the game quite simple despite a number of intricate rules. The rule book is well organized with few ambiquities, but included are some rather hokey illustrations.

Eight scenarios are provided, two versus Skinnies and six versus Bugs. These scenarios are well-balanced, despite appearances to the contrary, with the decision point coming late in the game. Because of the complexity involved, the average scenario takes about five hours to play.

SST is on a "tactical" scale, with one hex equalling one mile, and one turn equalling twelve minutes.



Each M.I. counter represents one M.I., while Bug and Skinny counters represent a larger contingent.

The M.I.'s form a formidable fighting force. There are three basic armor types: Scout, Marauder, and Command; each with a different combat/movement capability. The printed attack strength is only for close combat in the same hex. But the M.I. can carry additional ordinance, in the form of Special Weapons and Equipment (SW&E). Such items as rocket launches, delayed action grenades, heavy nerve gas and listening devices can be attached to inidvidual troopers thru the use of a pad with a full platoon TO&E provided. Additionally, combat engineers and a special talent are included in some Bug scenarios.

THE BUGS are not as well equipped as the M.I.'s, but have a greater asset. The Bugs can see exactly where the M.I.'s are, but the M.I.'s must depend on secondary intelligence to hunt down the Bugs. This is because the Bugs use a hidden underground movement system. The Bug player diagrams his tunnel complex on sheets provided. In addition to his complexes, he places a limited number of demolition charges. These charges range from low-powered HE charges to scale six nukes which affect a total of 37 hexes! During the course of the game, the Bugs use their engineers to extend the tunnel complex, as well as breach through to the surface. In general, the M.I.'s must penetrate the underground system to achieve victory, even though the Terrans cannot bring their formidable weapons to bear. Here, the hand-to-hand combat is critical, and infantry is still the queen of battle.

Seeing as how this game was approved by R. A. Heinlein himself, it is not surprising that the game retains the same flavor as the novel. But SST must be rated highly on it's own merits. It is a fast-paced and well-designed game, with interesting special features and a bit of a brain teaser as well.

SO FOR THOSE people who read Starship Troopers and said to themselves, "I know there's a great game in there somewhere", go out and get a copy of SST...on the bounce!

STARSHIP TROOPERS is available from Avalon Hill, 4517 Harford Rd., Baltimore, Md., 21214, for $10.00 plus $1.00 postage.

THE BIRDS, A game review of THE YTHRI

by Tim Hawkinson

THE YTHRI is a new game that simulates the book The People of the Wind by Poul Anderson. Two to four people can play, but it is basically a game for two players.

For those who are not familiar with the book The People of the Wind, I'll try to describe the basic plot.

The known galaxy is controlled by two empires, the Terran and the Ythrian. The Ythri are bird-like creatures capable of flight. The Terrans want the Ythrian empire as part of their own. In order to do this they must gather a massive force and try to overrun the Ythrian occupied territory. Avalon is on the border of these two empires. It is a successful cultural mixture of these two races.

Forseeing the Terran move, Avalon stocks its defenses with a powerful array of weapons. When the Terrans attack, Avalon gives up a staunch defense. Eventually overwhelmed, the space forces are scattered or destroyed. Unable to capture the planet without large losses, the Terrans leave the planet alone. But in a short time the Ythrian empire surrenders, and the Terrans again turn their intention to Avalon. This time the brute force of the Terrans proves too much for Avalon, and the invaders gain a foothold on an uninhabited continent.

However, nature is against the Terrans too, and it isn't long before their army succumbs to heavy-metal poisoning. This coupled with attacks by wild animals depletes morale. Unable to escape, the Terrans surrender.

GAME PLAY begins with the Terran space fleet attacking the Avalon fleet. The Terrans are three times more powerful and inevitably destroy the Avalon fleet. The Terrans, using their transports, land atmospheric units and bounce troops on the planet. They have to capture the Avalon bases, of which there are five. When they capture three the game is over. The degrees of victory are determined by the number of turns it takes to finish it. The longer it takes, the larger the victory for the Ythrian player.

There are two sets of rules, a basic and optional set. The basic rules are for the novice. The optional rules are for "Beer and Pretzel" play by the experts. The optional rules include hidden movement, ground energy projectors and Ythri moral index.

All in all, playability is good. As the rules note, it is a good idea to make a few alterations with the rules to suit your taste. But basically, THE YTHRI provides a good scenario, and Metagaming Concepts should be commended for another great game.

GAME COMPONENTS include: a 16-page, 8x11½ rules book; 242 perforation cut counters; a 17x24 space map; a 17x18 four-color, Avalon map; and space and planetary combat tables. It comes unboxed. The rules book has an attractive cover, depicting a space battle over Avalon, drawn by Winchell Chung.

THE YTHRI was designed and published by Metagaming Concepts. You can purchase it from Metagaming Concepts, Box 15346 DMA, Austin, Texas 78761.

feature by Elton Fewell

Intermediate Rules for STELLAR CONQUEST

For some reason we humans are unable to leave things alone. We are constantly changing, modifying or revising everything. This impulse is behind what follows, how to improve an already excellent game, STELLAR CONQUEST. When anyone presumes to alter a set of rules a decision must be made on retaining the game's existing balance and structure-- not an easy decision to make or implement. The following commentary and intermediate rules should demonstrate

that a significant portion of the thought processes was engaged, and that the balance desired was achieved. Several sections in the original rules appear to contain omissions or "unrealistic" values. Most of us will probably have different ideas about the future and its relation to the STELLAR CONQUEST Universe. The following is the author's vision, which I hope is similar to yours.

The most obvious change in the intermediate rules is in the weapons systems sequence. Several costs were revised to conform to a regular pattern of escalating costs. In order to save space a system of weapons grades is implemented for all physical weapons systems except the PFS. In the Fire Effects Table an ESC and a MB have the same destruction capacity, although they are different weapons systems. Under this system of classifying them according to weapons grades they are of grade one.

Interplanetary warships are part of these intermediate rules. The ship designations are Frigates (FRG), Cruisers (CRU), and Monitors (MN). Each of these interplanetary warships possess the same weaponry as their interstellar counterparts, ESC, ATK, and DN, respectively. The technology and equipment necessary for travel between stars will be much more complex and expensive than that needed for travel between planets. As our colonies are self-sustaining it is improbable that we require in all cases the more expensive ships. However, the limitation on our offensive ability by going to the less costly ship-type will compel players to utilize this new feature with caution. The use of interplanetary ships in several tests seem to add to existing styles of play and does not require completely new approaches. In fact, they fit in very smoothly.

THE DEVELOPMENTAL COST of these new ships is set below that of an equivalent missile base in view of the higher degree of standardization that is achievable in ship design. The construction cost of these ships is set above that of the equivalent missile base in view of their mobility within a star system. Taken together, these costs result in a balance of value between these essentially defensive weapons systems.

The use of interplanetary ships also requires the use of an "optional predecessor development" to represent the interchange of technology between two similar warships. If an interstellar warship has been developed, logically the developmental cost of its interplanetary counterpart is cut in half. If an interplanetary warship has been developed then the the developmental cost of its interstellar counterpart is reduced by one quarter. The ability to convert an interplanetary warship to an interstellar one is also introduced. The cost of conversion represents the installation of an interstellar drive unit (Mannschenn, Alderson, Thompson, or whatever) and the necessary modification. The total cost of a converted warship will be 25% higher than that of an interstellar ship built directly. The advantage of conversion is variable and depends upon the use of strategy and opportunity. Of course, the developmental cost of the interstellar ship must be paid for prior to any conversion.

In general theory interstellar ships must be built in space while interplanetary ships may be built on planet. The rules for besieged planets recognize this in the original version. Revising rule 7.3.1, we allow only interplanetary ships to be constructed and launched during a production year by a besieged colony.

In addition, a base at an important location should not be rendered useless by failing to improve its weapons. A missile base of one type could undergo conversion to an improved type at a lower cost easier than constructing from nothing. Therefore, the ability to improve missile bases is added in these intermediate rules. Note, however, that a higher total cost will be paid for a converted missile base than otherwise. The omission of a missile base with weaponry equal to a DN's is corrected by the addition of the Super Missile Base (SMB).

WHILE RECOGNIZING that in SC ship weaponry is different from planetary weaponry, there is inadequate justification for allowing one a higher rate of fire (ISW) than the other. Improved Weaponry (IW) is therefore substituted and applies to all physical weapons. The omission of some type of defensive improvement is rectified by the addition of Improved Defense (ID). If both players in combat possess IW the advantage is effectively neutralized. However, if one has IW and the other ID the advantage becomes dependent upon players use or misuse of these developments.

The PFS under the original rules is an incredibly inexpensive weapon to construct in view of the protection it affords. The intermediate rules increase the developmental cost slightly and double the cost of construction. The implication in the original rules - that a PFS is self-sustaining and selective in operation - is not acceptable. An energizing cost is used to represent the necessary expenditure of energy a force screen requires. To more accurately reflect the impenetrability of an energized PFS, it is necessary that the PFS be dropped in the Game Turn immediately before or after a production year if ships are to be landed or launched.

In the Ship Movement Sequence the intermediate rules establish cost change necessary to conform to the pattern of escalating values. Also one new development is added. A ship without weapons or cargo should be capable of a higher speed than a ship with such added mass. The development SCT+1 will allow a player's SCT's to exceed his regular MA at all times. With SCT+1 at the start SCT's could travel up to three hexes while all other ships may move two. With SMA and SCT+1 SCT's could move nine hexes.

IN THE TECHNICAL SEQUENCE, Advanced Ship Range (ASR) extends the operating range of all of a player's ships to 12 hexes. USR is reclassified and increaded in cost. The ability to extend one's range should logically precede the ability to operate completely independent of a base. The cost of developing such complete independence should be as great as the advantage it gives. Therefore, USR carries a high cost. USC is also reclassified as such a development would require a smaller commitment than the other Level 3 items require. The escalation in values is violated slightly between level 2 and 3 technology, because of the degree of advantage given by them. An imbalance in the game would be probable otherwise. Robotic Industrial Technology (RIT) is the new name for RIU. These changes in the Technical Sequence are admittedly based on subjective criteria because of the nature of the subject of speculation.

The new item introduced is Industrial Transport Capacity (ITC). It seems plausible that if population can be moved with IU's then the IU's could be moved without population. As the IU is essential to the existence of the population, then they may not move without IU's. ITC allows a player to construct CT's capable of moving IU's from colony to colony. RIU's may not be moved, as game balancing becomes impossible as long as there are NM planets. No extra cost is required for constructing CT (ITC), which are to land on inhabited Barren planets.

All of the changes made in the intermediate rules are intended to contribute toward a more "realistic" situation.

Although one person's idea of a more realistic projection of the future may be totally different from another's, I endeavored to base all changes on an objective set of values or hypotheses of what interstellar colonization and conquest might actually resemble. However, any change in a set of rules always seems to generate controversy. Before deciding on the desirability or undesirability of these intermediate rules test them several times. Only therein lies their value.

INTERMEDIATE RULES FOR STELLAR CONQUEST

Rule 5: Ship Attributes and Movement

Add 5.0 thru 5.4.11 refer to interstellar ships only except 5.1.3, 5.3.1, 5.4.6, 5.4.8, and 5.4.10

New 5.5 Interplanetary Ships: No interplanetary ship may leave the star hex where it was constructed.

Rule 7: Planetary Attack and Conquest

Rev 7.3.1 A besieged colony may construct and launch only interplanetary warships and only in a production year.

Rule 9: Technological Research and Development

Rev 9.1.5 Ship Types: The only ships that may be built with Basic Technology are of weapons grade zero (CT's and SCT's) and of weapons grade one (FRG's and ESC's).

9.4 Ship Movement Sequence

	Add 1	SCT+1	Allows a players SCT's to exceed the MA of his other ships by 1 at all times. -- 10 --					
	Rev 1	3MA	W/Pred: 20					
	Rev 1	4MA	W/OPred: 45					
	Rev 3	8MA	W/OPred: 85					

9.5 Weapon System Sequence: All physical weapons systems are classified by a weapons grade. Some may be converted to one of a different type or grade, but only if the systems have been developed. An * denotes an optional predecessor and may be used only if the optional predecessor has been developed. To construct a physical weapon it is necessary for an individual colony to "pay" for it alone.

1	MB	Missile Base: A planetary defense system of weapons grade one with a construction cost of 4 and a conversion cost of 8 to an AMB.	--	20	--
1	FRG	Frigate: An interplanetary warship system of weapons grade one with a construction cost of 6 and a conversion cost of 4 to an ESC.	--	--	--
1	ESC	Escort: An interstellar warship system of weapons grade one with a construction cost of 8.	--	--	--
1	AMB	Advanced Missile Base: A planetary defense system of weapons grade two with a construction cost of 10 and a conversion cost of 20 to a SMB.	MB	35	50
1	CRU	Cruiser: An interplanetary warship system of weapons grade two with a construction cost of 15 and a conversion cost of 10 to an ATK.	-- *ATK	25 12	-- --
1	ATK	Attack: An interstellar warship system of weapons grade two with a construction cost of 20.	-- *CRU	45 34	-- --
2	SMB	Super Missile Base: A planetary defense system of weapons grade three with a construction cost of 25.	AMB	65	80
2	MN	Monitor: An interplanetary warship system of weapons grade three with a construction cost of 30 and a conversion cost of 20 to a DN.	CRU *ATK *DN	55 55 27	70 70 --
2	DN	Dreadnaught: An interstellar warship system of weapons grade three with a construction cost of 40.	ATK *MN	75 56	90 --
3	IW	Improved Weaponry: A non-physical offensive system which allows all of a player's warships and missile bases to fire two barrages per ship/base per fire turn.	--	100	--
3	ID	Improved Defense: A non-physical defensive system which raises all of a player's warships and missile bases of weapons grade one and two by 1 grade for defense and requires two hits on a grade three target for destruction. No carry-over between fire turns.	--	125	--
3	PFS	Planetary Force Screen: An impenetrable shield around a planet which destroys any ship attacking or attempting to penetrate if energized. A PFS generation station has a construction cost of 40 and is automatically destroyed if the planet is conquered while the PFS is down. The station is not subject to attack at any time. To energize a PFS a cost of 10 must be paid in each production year. The PFS must be lowered in either the game turn preceeding or following a production year if friendly ships are to land or be launched.	--	150	--

9.6 Technical Sequence

	Rev 1	IIT	W/Pred: 20			
	New 2	ASR	Advanced Ship Range: Allows a player's ships to operate up to 12 hexes from his nearest colony.	5MA+	50	65
	Rev 2	USC	Unlimited Ship Communication	IIT	60	75
	Rev 3	RIT	Robotic Industrial Technology	AIT	80	95
	Rev 3	USR	Unlimited Ship Range	7MA or ASR	90	105
3	New ICT		Industrial Transport Capacity: Allows a player to construct CT(ITC)'s which may transport up to 4 IU's per ship without population. RIU's may not be transported. Rule 5.2.2 with appropriate substitutions applies to all times.	AIT	100	115

Ship Movement Sequence				Technical Sequence				Weapons Sequence			
1 SCT+1	--	10	--	1 IIT	--	20	--	1 MB	--	20	--
1 3MA	--	20	--	1 CET	--	30	--	1 AMB MB		35	50
1 4MA	3MA	30	45	2 AIT	IIT	40	55	1 CRU	--	25	--
2 5MA	4MA	40	55	2 ASR	5MA	50	65		*ATK	12	--
2 6MA	5MA	50	65	2 USC	IIT	60	75	1 ATK	--	45	--
3 7MA	6MA	60	75	3 RIT	AIT	80	95		*CRU	34	--
3 8MA	7MA	70	85	3 USR	7MA/AST/	90	105	2 SMB	AMB	65	80
				3 ITC	AIT	100	115	2 MN	CRU	55	70
									*ATK	55	70
									*DN	27	--
								2 DN	ATK	75	90
									*MN	56	--
								3 IW	--	100	--
								3 ID	--	125	--
								3 PFS	--	150	--

Industrial Output Cost Schedule

MB	4	FRG	6	ESC	8	CT - - 1	SCT(1)	3
AMB	10	CRU	15	ATK	20	CT(CET) 2	SCT(2)	5
SMB	25	MN	30	DN	40	CT(ITC) 3		
IU	4	RIU	3	PFS station		40		

Conversion Cost Schedule

MB to AMB	8	FRG to ESC	4
AMB to SMB	20	CRU to ATK	10
		MN to DN	20

....FEEDBACK....&....

Some of the functions of reader feedback bear repeating for the relatively large number of new readers this issue. Feedback forms in subscribers copies are to serve you in telling us your views and your opinions. EVERY form mailed in is tabulated for article ratings, game ratings and questions. EVERY comment and note is read. It's obvious TSG works on a shoestring budget. Readers are satisfied by content and service, not because TSG looks like PLAYBOY. TSG serves a special group of people and we depend on your input.

WORST SF&F GAME OF 1975

When all results of our "worst" rating were in 4,000 A.D. was the "winner". BATTLE OF FIVE ARMIES ran a substantial second trailed by STAR RAIDER, WAR OF WORLDS II and RIGELLIAN WARS. Readers definitely appreciated the opportunity to give the zap when they feel stung. We'll repeat the voting next year so keep your eyes peeled for this year's Turkey.

TSG #6 FEEDBACK

The way we interprete the rate for Overall is you're telling us you like what we're trying to do in general concept. But, you're also telling us execution and quality around our general themes should be improved. We're trying and succeeding, if slowly. If you'd like to see better material why not send in your own effort where you think it could be done better?

RATE	ARTICLE
7.3	TSG #6 Overall

GAME RATINGS

7.1	Tip for Dungeon Masters
7.0	Race for the Petal Throne
6.9	Starguard: Hit the Beach
6.5	The Ythri: Review
6.4	Vulcan's Forge: Tannish
6.4	TSG # 6 Art
6.3	Stellar Conquest: Gambit
6.2	War of The Worlds: Review
5.8	Rule to End All Rules
5.5	Variation on a Theme
5.3	Star Soldier
5.3	Muggers! Muggers!

(Serious bunch, what?)

GAME RATINGS

Not much room this issue for game ratings. There are a lot of new games out this fall so be sure and let us know what you think of them.

RATING	GAME
Fantasy Role Playing Games	
7.6	**Empire of the Petal Throne**
7.4	**Dungeons & Dragons**
7.3	**Greyhawk**
6.4	**Eldritch Wizardry**
5.8	**Tunnels & Trolls**
5.5	**Blackmoor**
5.3	**Royal Armies of Hyborean Age**
4.4	**Citadel**
Fantasy Board Games	
7.0	**White Bear & Red Moon**
6.9	**War of Wizards**
6.8	**Sorceror**
5.6	**Dungeon**
5.6	**Siege of Minas Tirith**
4.7	**Battle of Helms Deep**

Planetary Tactical Combat
7.1 **Starguard**
Future Society Level
7.8 **Stellar Conquest**
6.0 **Star Lord**
5.6 **Star Probe**
Space Tactical Leval
6.8 **Starforce**
6.5 **Triplanetary**
6.1 **The Ythri**
5.5 **Alien Space**

1977 METAGAMING PLANS

After publishing MONSTERS! MONSTERS!, which many are finding sets new standards for lower priced fantasy games, comes another game by a non-staff designer. WARS OF THE NARYM, retitled GODSFIRE after the game's purple hyper sun, is a multi-player, society level space game. Where STELLAR CONQUEST offered technology and production economics GODSFIRE offers political subversion and fiscal/monetary management. The impact of government banking and money management is crucial to the game.

GODSFIRE will be published in its full, complex form. In the development version that means two 22x34 maps with a unique 3-D graphic movement system (no messy extra markers), 600 plus ship counters for six players, 15 system political/economic sheets, 6 national government sheets, money markers, and an 8½x11 rules booklet with full color cover. Due to the expense the counters are only partially die-cut. The size of the game will push HYMENOPTERA, complex and sophisticated in its own right, back until probably February. Multi-player, multi-factor complexity buffs will have two brand new games simulating societies with entirely different game systems within two months. We promise the wait is worth it. DIPLOMACY nuts should be warned that GODSFIRE may make you swear off. DON'T send METAGAMING CONCEPTS money for this game until announcement in TSG #8 unless you are ordering it as part of the subscription renewal bonus. The price will be $15, $13 for subscribers to THE SPACE GAMER.

The space strategy and political segments of GODSFIRE can stand alone with small modifications. If there is enough interest separate versions may be made available. The political segment can have as many as 15 players which may have appeal to some educators or other groups.

We had decided to publish two non-staff designs after THE YTHRI. It meant delay on HYMENOPTERA but those who've been so patiently waiting shouldn't mind GODSFIRE first. GODSFIRE should be ready for mailing in mid-November.

All that GODSFIRE news is lead in to 1977. Publishing two major games like GODSFIRE and HYMENOPTERA in close succession is a big jump for a firm our size. It is prelude to bigger plans, of course. As you can see from our Feedback this issue there are a number of possible projects in the mill. TSG has continued to grow despite almost no advertising during six months of early 1976. This growth shows a potential market several times larger than initial anticipations. The keystone of large projects in 1977 is TSG subscription renewals and continued growth. With strong renewals TSG could reach 2-3,000 paid circulation in late 1977. That is enough support for several activities that are not possible at the current level. Renewals should be at least fair given that about 65% of you more than paid for your subscription with the game discounts during the last year.

A 2-3,000 circulation may make a MGC/TSG computer possible. With a computer business operations will be more timely and accurate. The computer could about half pay for itself with 2,500 subscribers in terms of better efficiency and productivity. With 2,500 subscribers the other half of the cost can just about be coverd by running computer play-by-mail games. We estimate 25%-50% would be in a game at any one time. 25% would be the breakeven on the other half of the cost.

It would take much more than the hobby type computers you may see advertised. An IBM system 32 costs about $40,000 and an IBM system 3 runs about $100,000. That IBM 32 won't do all we need either. But, you can see the cost magnitude, We won't buy IBM anyhow.

MGC/TSG has the expertise on the staff to avoid most computer pitfalls. The designer of STELLAR CONQUEST has 7+ years of professional experience as a programmer and systems analyst plus a business education. Outside staff is already available and waiting in Austin for systems programming and the initial configuring process. Several hundred hours is already invested in a thorough research and evaluation of vendor specifications and the new microprocessor technology and peripherals. When METAGAMING spends what are ultimately your dollars on computer hardware and software it won't be wasted. Powerful, cost-effective systems are available for the knowledgable buyer. MGC/TSG will have a flexible, expandable processing system properly done.

The first computer games will be only primative forms of The Game in Eldon Tannish. METASTAR SYSTEM 80 will be a first small step.

NEWS & PLUGS

STAR EMPIRES

"The 2nd part of the Star Probe game system which allows play to progress to the governing of interstellar empires and conducting fleet combats." Rules booklet from TSR Hobbies Inc., address above, for $4 or from Metagaming Concepts. ($3.75 for TSG subscribers.)

THE CHARACTER ARCHAIC

"The ultimate in playing aids--can be used for D&D and/or EPT. Character records, non-player character records, encounter record and more all beautifully illustrated." $3 from TSR Hobbies Inc, address above. (We don't carry it.)

STAR FLEET TACTICS I

A simple tactical combat simulation. Complete package including tournement rules $3.

STARFLEET TACTICS I: PBM TOURNEMENT

Four round modified Swiss pairing system. Will take about 1½ years to play. Entry fee $10. Entry fee and game $12.50. Entry deadline 12/15/76.

ADVANCED SC COMPUTER PACKAGE

Semi-computer moderated, 25 players per section, PBM SC variant using previously published "Advanced SC Methods". Entry fee $10, Includes rules. $8 if you already have the rules. $1 per move. These three items from Layout Design Specialists, Box 485, Glenview, IL 60025.

BATTLE DE MOSKOVA WINS CR AWARD

The Charles Roberts award for best amatuer wargame of 1975 went to a historical war game. Stellar Conquest had been nominated. Our information is that only 241 of the estimated 3,000 attendees at the Origins II convention voted.

STARSHIP TROOPERS

This is the Avalon Hill game based on the Robert Heinlein novel of the same name. It ought to be showing up on your retailers shelf soon. One of the five play-testers was in Austin so we had a chance to skim through the game but not play it. It is based on a planetary

STARWEB

Starweb is a computer moderated game where players may be a Pirate, an Empire Builder, Merchant, Apostle, Berderker or Artifact Collector. The game is just being started and will cost $1 per turn. Write Flying Buffalo Inc., Box 1467 Scotsdale, AZ 85252. Given the stage of development and complexity of the game it would probably be best to get information first.

STARFARING

"--a science fiction game of interstellar exploration, growth, and combat! ... --These rules are only a framework. The game depends on the quality of your imagination to fill in the details of life in the starfaring society of 2700 A.D. Available from Flying Buffalo Inc., Box 1467 Scotsdale, AZ 85252 for $6 or from Metagaming Concepts. ($5.50 for subscribers to TSG.)

GODS, DEMI-GODS & HEROES

This is the fourth and stated to be the last supplement to the Dungeons & Dragons game system. It covers Gods, mythology and Heroes as suggested by the title. From TSR Hobbies Inc., Box 756, Lake Geneva, WI 53147 for $5 or from Metagaming Concepts. ($4.50 for TSG subscribers.)

TOPOGRAPHIC MAP OF MARS

A map of Mars prepared from the 1972 Mariner 9 photgraphs. About 3 feet to a side. Available from the U.S. Geological Survey, Denver, CO 80225 for $1. Reference Number M 25M 3 RMC. A bargain.

SWORDS & SPELLS

"Rules for large-scale miniature battles based on the game Dungeons & Dragons." By Gary Gygax from TSR Hobbies Inc., Box 756, Lake Geneva, WI 53147 for $5. (We don't sell this one.)

LANKHMAR

This game is based on the series of novels created by Fritz Leiber who gets design credit with Harry Fischer. "The game of swords & sorcery warfare on the fantastic world of Nehwon." Fafhrd and The Gray Mouser are included characters. This is another TSR Hobbies Inc. game, address above. No price was on the box for the one we have. (We don't sell this one either.)

action when the hardy troopers try to dig out the bugs. Avalon Hill has opted to create the game at the tactical level which is sure to please devotees of their popular Panzerblitz game. Hopefully the game will be well done in the final version, graphics are sure to be up to the usual Avalon Hill boxed game standard. Price should be the $10 standard for other A-H games.

DRAGON PASS-- WB & RM

Greg Staffords White Bear & Red Moon was to have its' name changed to Dragon Pass in the second edition. But, Greg decided to retain the original name. Our current ads refer to the game as Dragon Pass. Greg also has a final errata for the first edition which is available for 25¢ and a SASE. Write to Greg Stafford, Box 6302, Albany, CA 94706. The new edition sells for $10. ($9 for TSG subscribers.)

GALAXY II NEWS

In a recent letter Brett Tondreau related some delays in the game turns for this computerized game. Brett had moved into a new job. Those interested in the game can write Brett Tondreau, 5536 Kester Ave., Van Nuys, CA 91411.

NON-RECOMMENDED NOVELS

As popular novels are going there is increasing tendency for "mainstream" novels to draw on long developed science fiction themes. SHARDIK and THE TOMORROW FILE fall into this category. If you want to read several hundred pages that is tepid, sluggish fantasy saying 'bad is evil and good is nice' then read SHARDIK. If you want a fair novel that has the obligatory sex of modern novels but is poor sf then read THE TOMORROW FILE. HT

THE DRAGON

This is TSR Hobbies' 32 pages slick magazine. The second edition has a full color cover again with a few color interiors. Most of the material is still D&D-oriented and this issue lacked a table of contents. A fiction piece by Gardner Fox was featured. The Dragon is improving and a sure bet. Six issue subscription is $9, single issues are $1.50. From TSR Hobbies Inc., address above.

STARSHIP & EMPIRE

This game was mentioned last issue and we now have a copy. The components include 10 ship characteristics sheets, four Star Fleet charts, 22" x 35" black & white map 480 counters in four colors and die-cut, combat results table, and four strategic maps with rules booklet. Available for $8 + 75¢ postage from R-squared Games, Box 8314, Salt Lake City, UT 84108. Review anyone?

STAR COMMAND

This is rules booklet intended to allow players to fight ship combats with ship miniatures. The booklet is available from Lou Zocchi, 7604 Newton Dr., Biloxi, MS 39532 for $4. This may be part of a game system that will also include the miniature ship figurines at some later date.

VENERABLE DESTRUCTION

This is a fairly simple fantasy board game. It has die-cut counters and a map with rules. Available from Excalibre Games, 5880 73rd Ave North Apt. 108, Minneapolis, MN 55429 for $5.95. Unboxed.

fiction

DREADNOUGHTS FOR MY LADY

by Neil Shapiro

(* NEIL SHAPIRO has recently completed his first novel, an SF venture which will be published in late August by Major Books under the title COLONY.)

Lady Alice of the Singhe Dynasty, First-in-Council and Ruler of the Dozen Suns, rose stiffly from the deeply cushioned mattress and ineffectually tried to rub the sleep from her eyes. She stifled a most unroyal yawn and assumed an expression which she could only hope appeared more regal than exhausted.

"Now what is it?" she asked her Lord on the Privy Chamber.

The lord, the hereditary Earl of Tauri Two, looked as apologetic as his muttonchop whiskers and jocularly round face would allow. He had also the good sense to avert his eyes away from Her Highness' undraped and almost scandulously curvaceous figure. He silently wished that tradition might demand something other than a male Lord of the Privy Chamber.

"Quite sorry for disturbing you, Highness," he looked so adamantly at the floor it seemed his gaze might burn through the tiles, "but the Council has called an emergency session. Even now a quorum awaits you in the Stellar Chamber."

(DREADNOUGHTS Continued on Pg. 25)

SCENARIO: CAPTAIN MARVEL AND DRAX THE DESTROYER VS. THANOS OR THE WAR FOR THE UNIVERSE

by Dennis Colodiy

Using basic TRIPLANETARY rules and counters, you can make slight modifications to create an interesting scenario.

I. Characters, descriptions, and objectives

1) THANOS is represented by a dreadnaught starting on the planet Mars. Seeking deification, he possesses the "cosmic cube" which, when activated, gives him unlimited ordnance (nukes, mines and torpedoes) and never-ending fuel. In order to activate the cube, Thanos must first orbit Jupiter. After attaining orbit he realizes the cube's potential and understands his goal--to destroy every planet in the universe for his companion and lover, Death. Thanos has the capabilities of one overload between each planet destroyed. He may not initiate attack on warriors, however, he may counterattack when fired upon. In order to destroy a planet he need only hit one planet side with a nuke from an unlimited weapons cache.

1.1) To give him time to reach Jupiter, Thanos also has a fleet of two corvettes on a preplotted suicide course for Terra, starting stationary or in orbit anywhere within the radar range of Mars. Each ship that crashes on Terra, without being disabled, reduces the planetary defenses by one.

1.2) Thanos may attack any planet at any time but Terra. He must attack this planet last.

2) CAPTAIN MARVEL/RICK JONES are represented by a frigate and corsair respectfully, starting on Terra. These ships do not have any weapons other than guns. In order for Marvel to exist in the positive universe, he must share space with a Terran boy, Rick Jones. For one to be in this universe the other must be in the negative zone (except for 2.1). Transfer occurs in the resupply phase by clashing the negative bands on their wrists together, expending one fuel point. Refueling takes place while the warrior rests in the negative zone. On transfer back to the positive, that warrior is refueled. Marvel is allowed one overload, as is Rick Jones, between positive-negative transfer. Marvel's first priority is to destroy the suicide fleet before it destroys the Terran defenses. If after the attack he can reach Mars and orbit before Thanos destroys it, then he will have broken the power of the negative zone (see 2.1). Captain Marvel, by previously earning "cosmic awareness" through Eon, the living planet, has become the sworn protector of the universe. He must therefore destroy Thanos, although Thanos is heavily favored to reduce the solar system to dust particles.

2.1) Marvel/Rick Jones can break the power of the negative zone if either can orbit Mars before Thanos destroys it. Once the zone is broken, both Marvel and Rick Jones can exist in the positive universe simultaneously, able to go in their own directions. Then, by expending five fuel points, either warrior can perform a "nega transfer" to the other's position. That is, Marvel or Rick Jones can reenter the negative zone and transfer to the other's position, while remaining in the zone. After a game turn the warrior in the negative may expend one fuel point to return to the positive with the same position and course as the other.

2.11) Should this neutralization of the zone occur, then the warriors may refuel by transfer to the negative zone. This procedure will cost one fuel point to enter the zone and another to leave the zone Warriors may not alter course orspeed while refueling in the zone.

2.2) Captain Marvel, because of his cosmic awareness, can avoid both mines and torpedoes. He cannot, however, avoid a nuke since it does after all destroy the hex that it lands on or passes through. Since Rick Jones is only a mere Terran, he is affected by all types of launched weapons, as well as guns.

3) DRAX,THE DESTROYER, was created from cosmic dust by a godlike being, Kronos of Titan, before the latter was captured and subdued by Thanos. Kronos, forseeing the menace of Thanos, breathed life into Drax the Destroyer, who exists with the sole purpose to stop Thanos. Drax is represented by a torch ship in orbit around Ganymede and has no weapons other than guns. He is allowed one overload maneuver between attacks on Thanos (close enough to have done damage, even if none was taken). The Destroyer is in a constant state of combat with no regard for his own safety. For, since he is nothing but cosmic matter, he cannot die. Destruction or leaving the universe (board) will only place him back in orbit around Ganymede on his next turn. If Thanos has already destroyed the planet Kronos has given Drax the capability to appear on the hex where the planet formerly was.

II. Gravity
1) Once Thanos has successfully destroyed a planet, gravity no longer exists there. Otherwise, full gravity is assumed for all other planets, with the exception of half-gravity planets.

III. Destroyed Planets
1) Once a planet has been destroyed, all warriors may pass through the planet hex with no ill effects. Otherwise, passing through a planet would cause the warrior's death (with the exception of Drax).

IV. Asteroids
1) Passing through an asteroid hex at a velocity greater than one normally moves causes one to determine damage results. Asteroids have no effect on Marvel (cosmic awareness), Drax (the power of Kronos), or Thanos (once he has activated the cosmic cube). On his way to Jupiter, however, Thanos is indeed affected by them and takes his chances as any other. The suicide fleet is also affected as is Rick Jones since they are, after all, mortal beings.

V. Planetary Defenses
1) Considering the number of superheroes on Terra, normal defenses are in affect against Thanos, unless the suicide fleet is effective. If so, depending on the number of ships that crash into the planet, defenses can range from 2:1 to 1:2. Since the suicide fleet is a surprise attack it is not affected by defenses. No other planets have planetary defenses.

VI. Victory Conditions
1) Thanos wins by destroying the universe and thereby also winning the hand of Death.
2) Marvel/Jones win by staying alive and protecting the universe by eliminating the threat of Thanos.
3) Drax the Destroyer wins if he stops Thanos.

(DREADNOUGHTS from Page 22)

"A quorum," Lady Alice sniffed loudly. "Eleven buffoons waiting for a twelfth."

She clenched her right hand into a fist. The gesture activated a digital time display which lit redly among the light blue veins of her delicate wrist, just beneath the rose pale flesh. She regarded the digits.

"It has been but seven hours since the last emergency meeting," she complained, "and only six since I was able to sleep."

The Earl nodded, swallowing his discomfort. Once dismissed, he literally ran from the Presence, hardly allowing the chamber's doorway time to dilate fully open before ducking through it.

Lady Alice touched a sensor imbedded in the ornate wood of the carved bedpost. Immediately, the sound of rushing water filled the room. She crossed to the bathing alcove but allowed herself only a moment to bask in the pinpoint spray of water, stimulants and perfumes.

A rush of warm air dried her, and she went to stand before the holographic mirror of her wardrobe. The holo-mirror flickered again and again, each time showing her her own three-dimensional image dressed in a different garb. She chose the most austere of clothing; a black and unrelieved full skirt with a tight, tubular top. She pressed the ready button and a dozen servants scampered in with the chosen garment and hurriedly dressed her in it.

Finally , the Earl of Tauri Two returned to escort her to the Stellar Chamber. She walked down the dark almost Earth-medieval corridors which had been built more than four centuries ago. It had been all of that many years since her remote ancestors first gained mastery of the Council's Quadrant of the surrounding stellar cluster.

It was musty, dim. Lady Alice did not share her Dynasty's love of such places. Yet one more annoyance of her royal life.

She ruled over two-hundred billion inhabitants of twelve star systems; most settled under the Council's four yellow stars, Tauri, Spica, Bootis and Schedar. The Council was only for advice--it was mandatory that she listen to their advice, but she was never forced to accept it. So, her decisions, her edicts, had the force of law, final and resolute, for her people.

The War too was her responsibility. She would have wished otherwise, hers was not a sanguine nature. She was too pessimistic, too empathic ever to be an able general. Yet, she could force herself when she had to; and most days, ever since first contact with the Enemy, she had to.

The Enemy, the Scorpii Confederacy, was certainly the aggressor, no doubt of that. Right, justice, all were on the side of the Council-of-Stars and their lovely ruler, First-in-Council, Lady Alice.

It was a shame the Council was so desperately losing the war. History has always been full of shameful facts.

The Council looked up all at once, like an eleven-headed monster, as their hereditary ruler entered the Stellar Chamber. Lady Alice took her seat at the head of the long, wooden table. Overhead, in glorious counterpoint to the plainness of the Chamber's furnishings, the ceiling was a blazing, holographic canopy of bright stars representing not only the stellar cluster's physical appearence, but each star was color-coded as to such things as spectral class, habitability of planets, industrial output of populations and offensive/defensive capabilities. In addition, the stars of the Council-of-Stars had been programmed to shine steadily, like beacons, against the starlight flickerings of the others.

"Gentlemen," Lady Alice addressed her advisors, "I assume we once more are on the brink?" She stared impassively down the table's length. "Your reports, please."

She noted that Lord Kevin of Bootis was trying to catch her eye. A warm flush spread to her cheeks. He was certainly handsome that morning, dressed in the

tight-fitting tunic he knew she loved so; the heraldic symbol of his family stretched tight against his muscular chest. She frowned quickly at him, then looked away. He should know better, she thought, than to risk making their liason known in the Chamber.

Lord Eric of Spica, the usual spokesman, rose to his feet. His eyes were even more red than usual, and his usually hearty voice quavered with emotion.

"The Council has met in advisory session," he began, "and it is my most unpleasant duty to inform you that," he hesitated, then, "all here assembled, with but an obvious exception, recommend the immediate arrest and mental-wash of Lord Kevin of Bootis for the crime of High Treason."

Lady Alice blinked. The words hardly seemed to make any sense. She glanced about the Chamber and saw what she had missed before. Men-at-arms, hidden by the tapestries along the walls and the shadows in the corners, stood with drawn weapons all pointed at Lord Kevin's strong back.

"Your reasons for such a heinous charge?" She bit off the words one by one, her voice a stranger's to her ears.

"So obvious, it is embarrassing." The speaker was Lord Wallen of Wezen. He was a tall, thin-faced man whom Lady Alice had never liked, though now she began to hate him. "When Wezen Four was ordered to use all of its industrial output late last year to build even more factories, I acceeded even though I said in council that it would be better advised to build missile bases. Only a week later, Wezen Four was attacked by a squadron of attack ships. The Confeds had a very easy time of it,and so I now find myself hereditary lord of a captured people."

"Coincidence," Lord Kevin shouted, "pure and simple."

"Coincidence, is it?" Lord Jason of Wolf leaped to his feet. His tired face shone with sweat, unused as he was to the heat of a yellow sun and the warmth of anger. "It is only luck that both Wolf One and Four have not also been eliminated. Without the natural metals of Wolf Four, well, this Council would be in a sorry plight. As you ordered, Highness, all of our capital has been placed into all-Council technological research. I cannot pretend to have the complete picture--perhaps Level Three Technology is as important as you think. Yet, because of that capital outlay, as I warned in Council, we were unable to complete our missile base program. I have just received word," he waved a flimsy paper, "that the Confeds attacked Wolf Four less than three hours ago!"

"The results?" Lady Alice braced herself.

"The Confeds, thank the First Cause, were destroyed, but at the cost of every missile base of Wolf Four."

"Grave indeed," Lady Alice agreed. "But you have not yet made any case against Lord Kevin."

"Do you know what this is, Highness?" Lord Jason waved another, thicker paper.

"Certainly," Lady Alice answered coolly, "it is my Writ of Order regarding the economic program of the Council in relation to the Wolf colonies."

"No," the Lord from Wolf shouted triumphantly. "It is a reproduction of that Writ, a copy."

"So?" she asked, already guessing the answer.

"This copy," Lord Jason informed her, "was found in Lord Kevin's rooms--and also a concealed sub-ethereal transmitter tuned to the Confed frequencies."

"Lord Kevin," Lady Alice regarded her lover, "you can explain this?"

"Lies," Lord Kevin smiled. "You and I, we speak with our hearts. We cannot be fooled by mere words, sounds which are devoid of love and, hence of meaning."

Lady Alice turned to Lord Jason. "As most senior member of the Council," her voice wavered, steadied, "you may exercise your duty to now order the arrest and confienment of Lord Kevin of Bootis."

Lord Jason raised a gnarled hand, the men-at-arms stepped out of the shadows. The chromed snouts of their rifles reflected the holographic light of the star-mapped ceiling as they escorted a protesting Lord Kevin from the Stellar Chamber.

The outer door closed as the guards escorted their prisoner out. It was now silent enough that Lady Alice could hear the breathing of the assembled Lords-in-Council.

She looked about the long table. If she had her way she would execute them all before harming even one hair on Lord Kevin's finely featured head. Above her flickered the stars of the enemy while the Council stars burned steadily and, within her, there flamed a terrible responsibility. The heat of it all seemed more than enough to devour the flesh, even the soul, of any young girl.

"Let us plan our war," her voice was cold, as empty as ever were the spaces between stars.

* * *

The room was lit only by the dim light from an interiorly lit sculpture set in one corner of the room. From her bed, Alice could just barely see the silhoutte enter her chambers, pause, and look about with as yet night-blind eyes.

"Over here," she whispered to him, "I've been waiting for you."

Lord Kevin stumbled his way to her bedside. Then, his weight beside her, his warmth, it was like so many times before.

"I knew you could not believe them," he said, whispering into her ear.

"How could I?" she asked as he embraced her.

He laughed as he held her. "Still, I was a bit doubtful when you seemed to go along with the Juiceless Wolf."

She kissed him. In a moment, all thought of the Council and the Stellar Chamber was gone. The plastic sculpture, following the programming of its artist, dimmed, brightened, dimmed again as time passed and the night advanced.

"Alice?" There was no reply. Lord Kevin gently, carefully, swung himself so that his legs were off the bed, his feet resting on the floor. He rose as lightly as a cat, disturbing the mattress as little as possible. He held his breath. The only sound was Lady Alice's midnight breathing, slow, regular and trusting.

He walked to a pedestal table just a few feet away. From a pocket of his tunic, discarded over a chair, he withdrew a small, cylindrical devise. He flicked it on. A beam of partially coherent light illuminated the papers on the tabletop without lighting the rest of the room at all. He examined the papers.

"Dreadnoughts!" the word was torn from him in astonishment. "Four of them!"

He regained his composure, looked over to see if his startled exclamations had disturbed Lady Alice. She still slept soundly and he returned to his perusal of the papers.

He riffled the official documents which outlined the new plan of action the Council had adopted after his arrest and removal from the Chamber. It was all there, spelled out so that anyone--and certainly the Confed's best agent--could understand it. The Council of Stars was making a final push, a huge counteroffensive.

He could now understand that for the last year, all the capital from every colony had been put into weapons and technological research. True, that had already cost the Council one colony, and weakened another important one.

Still, it might prove worth it all.

The Confederation Command had planned on the basis of the Council continuing in a defensive posture. It had been assumed that Lady Alice's worlds would be using all of their resources for missile bases and the colonization of low-habitability but high-resourced worlds. It was true that the Confederacy still had a much higher offensive potential. But, it was still only potential, not reality.

The Confederacy had more attack ships than the Council, greater ship range, and was very close to a two hundred percent increase in weapons' effectiveness.

But, the Council had dreadnoughts now. They were not potential, they were already built. Skimming the papers, Lord Kevin speedily determined that if the four dreadnoughts were destroyed, the Council lacked the ability to replace them handily. In fact, the Confederacy, given notice of the threat, could easily outstrip the production capabilities of the Council.

If the dreadnoughts could be defeated, it was apparent to Lord Kevin that

the Council of Stars would economically crumble, and would have to sue for peace.

On the other hand, undestroyed dreadnoughts might be able to turn the tide in favor of the Council.

He saw that the dreadnoughts were based on one of Lord Wallen's colonies that orbited Wezen. There, at the outer fringes of the Council's sphere of stellar empire, they would be able to strike at either Dubhe or Cygni in the Confederacy. Either would be a terrible loss to the Confederacy as both were population centers holding much economic clout. Yet, each could only stand against a squadron of dreadnoughts if reinforced by the majority of the Confed's attack ships.

Obviously the dreadnoughts meant a three-dreadnought attack on either Dubhe or Cygni while the remaining dreadnought kept the other colony's forces busy.

He rushed as fast as he could through the Writs until he found the one he sought. Lord Kevin smiled, this was the information that would save the

Confederacy.

The dreadnoughts were to make a mass attack on the Cygni colonies. Dubhe would be attacked by only one ship. The Confederacy's drive-detectors could not, of course, detect which was the stronger force but only that both stars would be under attack. In a normal situation, the Confeds would have to protect both stars and split their forces. And, under normal situations, the star attacked by the dreadnoughts would probably fall.

Not now, however.

It remained only for Lord Kevin to communicate to his masters that it was Cygni which was to be attacked by the dreadnoughts. The Confeds would pull the bulk of their armada to Cygni as Dubhe's missile bases alone could handle a small attack.

Protect Cygni and, in a short time, the Confederacy's savage technology could be geared to producing more dreadnoughts than the Council could dream of. It was Cygni which was the key, the secret the revelation of which would cause the stars to align themselves into new, if political, orbits.

Kevin looked a final time at Lady Alice's sleeping form. He pulled a blanket up to cover her bare shoulder, then slipped silently out of the room, smiling to himself. He clutched the papers tightly to his chest, being careful that they made no betraying, rustling noise.

Lady Alice was once more alone. But then, she had been so all of her life.

* * *

Lady Alice leaned against the cool surface of the glass. Her skin trembled where it touched that cold expanse of transparency.

"Complete success," Lord Jason bubbled happily, "even better than hoped. They protected Cygni all the time we were busy invading Dubhe. The Dubhe worlds have been completely garrisoned. Our own people are now being moved in to take over the colony's production facilities and replace those the native guerrillas destroyed. Four more years and it'll be back to full production, this time producing for the Council. With our economy on the rise, the Confeds reeling under the loss of Dubhe's planets, we'll own this whole star cluster in but another generation."

Lady Alice nodded, "How wonderful," she said, her voice as thin as a reed.

"Wonderful?" Jason cried, "so much more than that! And the Council realizes we owe it all to you. If it had not been for your using Lord Kevin to pull the Confed's ships to Cygni while we took over Dubhe...."

"I do know what my own plan was," Lady Alice interrupted him, "You do not need to repeat it to me."

"No," Lord Jason made a sound halfway between a cough and a harrumph. "Still, it was brilliant of you to let him get the fake Writs."

Alice sighed. She turned and looked through the glass wall. She shuddered and choked back the nausea rising in her throat.

Lord Kevin's form was mostly hidden by the medical technicians who were disassembling the myriad of shining equipment hanging over and around his bed. Gradually, as a brain-burner's shields were removed, Lord Kevin could be seen.

His eyes stared blankly at the ceiling. Whatever light which had once shone from behind them was now gone. The machine had washed from his mind every fact he knew about the Confederacy. Unfortunately in order to do this, it had been necessary to "burn" the rest.

"Brilliant plan," Lord Jason was repeating. "Absolutely brilliant of you."

Lady Alice, of the Singhe Dynasty, First-in-Council leaned limply against the clear wall. She was the hereditary ruler of more than two hundred billion citizens of the Council of Stars.

She would have given it all up if she had only been able to cry.

-.-.-.-.-.-.-.-.-

Author's Note

The idea for "Dreadnoughts" came about while playing a game of STELLAR CONQUEST. I had managed to tip over a counter while I was moving it on the map, providing my grinning opponent with certain information. As it turned out, the information led him to believe the opposite of what was actually happening.

Since that game, I have "accidentally" revealed counters both in STELLAR CONQUEST and other board games which use limited intelligence. (Though never twice with the same foe.)

While not so very nice on my part, I think it does simulate one aspect of war which the above story also attempts to--purposely giving your enemy just enough faulty information for him to hang himself! Unfortunately, such a tactic does not make me very popular.

LETTERS

Dear editor:

I read Mr. Bowles article on lasers in issue #5 with a good deal of interest. It was, on the whole, a very interesting and informative article. I am afraid, however, that I must differ with him on a minor point. He mentioned using lasers in space and talked of them moving the effective range of combat out to about 300,000 miles. That is a very impressive figure, but I wonder if anyone has sat down and thought about it a little more closely.

First of all, since I am a fan of the metric system, I will use metric measurments throughout this discussion. The range can be rounded to 500,000 km for our purposes. I have no doubt that a high-power laser could be built with a theoretical range of half a million kilometers, and it could thoroughly destroy a target at that range if it hit it. But, there is quite a bit of difference between shooting at something and hitting it.

Before we go any further, though, let's decide just what the "it" we are shooting at is. To use something that we are all familiar with (or should be) let's use a Saturn V rocket. If I remember correctly, the Saturn V rocket is just a shade over 100 meters tall, and about 12 meters in diameter at the first stage. In mass it compares very closely with a present day naval destroyer. It seems to me to make a fairly reasonable target.

Now that we have our target, let's go on to discuss the rest of the problem. Before you can hit something, you have to aim at it. And this is the crux of the matter. Mr. Bowles mentioned using laser tracking and ranging instruments. So let's see just what our target tracks like. The long axis of the Saturn V is 100 meters; at 500,000,000 meters range, that translates to an angle of 1.1459×10^{-5} degree. That's $.000011459^{0}$. Put another way, it would be like aiming at a dime 90 km away. To illustrate what this means in another way: if we were using a laser projector that was 10 meter long and the emission end was off by 10^{-6} meter or 1 micron, we would miss the target completely. No matter how accurate the tracking equipment was, the bottleneck developes in the actual aiming of the weapon. I don't see any way that that kind of accuracy could be achieved.

The previous argument assumes that the laser beam were a single point that had to be aimed perfectly. Suppose, however, that our beam were a little larger in diameter. This would mean that we won't have to aim quite so accurately after all. So if we let the beam diverge a little, we can be a little less demanding. We'll have to set up a hypothetical piece of equipment to carry the argument on. We already have a laser projector that is 10 meters long. We'll say that it emits a beam 1 meter in diameter, and also that it has an energy density of 180,000 joules per square centimeter. According to Mr. Bowles' table, this is 3 times the energy needed to vaporize iron and 5 times that required to vaporize aluminum. Now that we have a weapon, we'll put it to use and see what kind of damage we can do to our target.

With no divergence, our energy density when we hit the target would be essentially the same as that which left our projector, and we would vaporize a 1 meter hole right through the target. Energy density goes down as the inverse of the square of the diameter of our beam. So if we let the beam diverge to 2 meters in diameter, the energy density would be 1/4 our original amount or 45,000 joules/sq cm. We can still vaporize his hull if it is aluminum, and melt it awfully fast if it is iron. With a beam 4 meters in diameter we would have an energy density of 11,250 joules/sq cm, and we can still melt his hull if it is either iron or aluminum. If the beam diverged to 8 meters, the power density would be 2812.5 joules/sq cm, and we can melt the target hull if it is aluminum and warm it up a bit if it is iron. And, of course, this is all assuming that the target absorbed all of the energy striking it, which is extremely unlikely.

It should be obvious that we can't let our beam diverge too much (any at all is too much), and therefore we can't let our aim get too sloppy. So let's get back to that figure of 1.1459×10^{-5} degree for our target. Our hypothetical laser had to be accurate to within 1 micron in its tracking to hit the target. Let's make the fire control problem even more difficult. 500,000 km is 1.67 light seconds. That means that we have to lead our target by 1.67 seconds to hit it. Suppose that the target was in geosynchronous orbit around the earth, and we were shooting at it from out near the moon, (approx. 500,000 km). Our target would be moving at about 3.64 km/sec. That would mean that between the time we fired our laser and the time the beam hit (hopefully) the target, the target would have moved about 6 km. So we would have to lead it by 6 km, in addition to tracking it to within 1 micron with our laser. This is assuming of course that the target was not taking any evasive action. As far as evasive action is concerned, the target would only have to move a maximum of 50 meters from where we are aiming during that 1.67 sec., and we miss it completely.

This all indicated to me that engagements taking place at ranges on the order of 500,000 km are unlikely in the extreme. 5,000 km would be a little more likely, but even that may be too high. At that range our Saturn V would be 1.1459×10^{-3} degree long, and the laser would have to track to within .1 mm. This seems almost reasonable, but may still be a little to far.

If you reduce the range to 500 km. the Saturn V is now 1.1459×10^{-2} degree

long, and the laser has to track to within 1 mm. Also, at this range the beam transit time is .00167 sec., and our hypothetical target in geosynchronous orbit would only move 6 meters. With the kind of fire control I would expect to see in the near future, I don't see how anyone could miss at 500 km range.

I have no doubt that when the inevitable conflicts begin to take place in space, the laser will be a very much used, and formidable weapon. However, I think that the ranges involved will be more on the order of 5,000 to 500 km rather than 500,000 km.

Norman E. Apperson
APO New York 09755

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

I have a belated comment on the article in TSG #4 entitled The PFS Rip-Off, in which the price of the new Super Missile Base was stated to be 30 IUs of output for each one. If the ratio of missile base cost to war ship cost is examined, the price of the other missile bases is one half that of the ships which they counter. Therefore, the price of the SMB should not be 30 IUs but ½ of 40 or 20 IUs.

Donald Kaiser
Lake Bluff, Ill.

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

I would like to make some comments on your most recent issue of The Space Gamer. Over all, this was your best issue yet. I'm glad that you could add more drawings by Winchell Chung. I really enjoy his style. I think it would be good to devote one issue to all fantasy drawings, or at least add more fantasy drawing in future issues. I didn't especially care for the front cover drawing by Mark Norton. It reminds me a lot of the terrible drawing in the rules book of the game STAR PROBE.

As I was reading one of the articles, Sumner Clarrens review of those two fantasy games, and while he was talking about all the different colors it occured to me--what about all the color-blind people of the world? I am not color-blind, but I think you should think about this before you profusely splash your markers and boards with a myriad of colors and use color alone for identification. You may even lose customers because of their problem. I have no solution to this, but its just something to think about.

To fully comprehend the article "Ship Effectiveness in STELLAR CONQUEST" you would have to be a math major. I don't know where Mr. McDermott got all those formulas, but it was impressive. I don't know if it is real good to take a game apart so much. I like it better as just a simple game of chance. In STELLAR CONQUEST, you can only use those charts for very basic odds. The chance throw of the dice is so diverse that those charts are almost useless.

This month's "Eldon Tannish" was the best one ever. Compared to the last one and the one before that (which were sleepers), this one was like a thunder bolt out of the dark. I hope you can continue with the style you showed in the last one.

Tim Hawkinson
Worthington, Mn.

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

You have a fantastic magazine. Your articles are terrific, and always interesting.

TSG #6 was, as each issue is, great, to say the least. I was going to comment on your superior art, but as soon as I opened my envelope that cover picture revolted me. I don't mean to belittle Winchell Chung's artistic abilities, but this time it just came out gross!! Of course, as always, the rest of his art was fantastic.

Keep up the good work.

Pat Brennan
East Hartfor, Conn.

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

Sit down, take a deep breath, and be calm. I'm about to criticize STELLAR CONQUEST.

I have noticed that too many SC games go nowhere. This is due to the PFS and the production problems. In the early part of the game, everyone is too busy establishing himself, building up population and keeping track of production to attack his enemies. Sending out raiding parties weakens his own defenses, and many can't bear risking all they've built up. Later, when your production has expanded to the point where you can risk some of it, everyone starts building those lousy PFS. You can't get through it, and it says in the rules "A PFS does not hinder the building player's ships or activity"--contrary to what was said in TSG #2. When you reprint SC, include a short scenario as in TSG #2, and either drop the PFS or include a way to get through it.

SPI is coming out with OUTREACH by the end of this month, as you doubtless know. While it doesn't sound as action-oriented as the peerless STARFORCE, it still sounds good.

I must disagree with the fellow that reviewed STAR PROBE in TSG #3. It is not a very good game. For one thing, the player can affect what his discoveries will be. He can find many rich planets, but he'll get into much more trouble. It's as if the player were creating the systems instead of finding them! That is totally out of the question and quite unrealistic. I'm afraid it spoiled the game for me somewhat.

Scott Rusch
Wolden, New York

Dear Howard:

First of all, you may be wondering what has happened to CHANGELING #3---the answer is very little, since my current supply of art is insufficient, i.e. the cover is still in California with the artist and won't be here for a while yet, which has me (among others) a little peeved, but if you're at all familiar with the work of Greg Vander Leun, I think you'll agree the wait is probably worth it (I hope!).

For extra booklets (a good idea, since sf wargaming, practically by definition, is a progressive field), may I suggest a collection of Chung's spacecraft diagrams? Also, one of the great beauties of SC is that it's adaptable to many scenarios---Foundation & Empire, the Lensmen, and lots more, which could be made into a whole series of books...

Come to think of it, the whole wargaming is somewhat fictional---the Germans beating the allies at Bastogne, for example, is hardly an occurence that fits into our present universe, nor is having Xerxes wipe out the Greeks. Sf gaming is actually a natural extension---rather than changing history, it's possible to change non-historical events with close-to-equal realism and the same game concepts, yet without causing any conflicts with reality...as well as creating the complex and fantastic scenarios of games like SORCEROR (lesee...green over yellow, but blue over green...)

Surprises? My guess is a fantasy game, or else perhaps putting amateur games into the zine...Rich Bartucci's "MI" being the kind of game I mean. No special map necessary, only the counters...am I right?

I wonder just how much trouble AHC & SPI could cause for you, actually...it took AHC more than two years to produce LUFTWAFFE, and to create original sf games of professional quality requires not only the basics of game design, but also extra creativity in the direction of building up the world-system to be used and making sure it isn't just a copy of some other game...

∴ .Well, this letter is awful short, but the high was 99 degrees today and the den, wherein resides my typer, is probably the hottest part of the whole house, and I just can't take it any longer...but at least now you know what's happening to the zine you so generously contributed and plugged...

Sincerely,
K. Allen Bjorke, Esq.

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

If I may, let me say that your editorial judgement has been excellent so far, as I have enjoyed every article in every issue. Things like the laser piece last time are excellent additions to game reviews.

However, it is something of a pity there are not more strategy articles a'la the recent contribution on SC concerning escorts vs attacks, bonus IU allocation, etc. Something like that on say, STARFORCE or STARLORD might be good. I'd do one on TRIPLANETARY except I would use a more clear but a little less realistic movement system (I always plot movement so as to give a ship its velocity in one of the hexside directions only. For the actual velocity I simply count hexes actually travelled through) that would have subtle changes combat. In any case...

Do you ever get much chance to play S-F games? Though it's fun to read and write about them, the real pleasure is the play, don't you think? I'm engaging in a "fictionalized" solitaire game of TRIPLANETARY at the moment. It's a bastard mix of the piracy, interplanetary war, and prospecting senarieos. I say fictionalized, because rather than just fight a set price battle, I'm playing the sides more like in "real life". The reasons for war are more than attempting to fulfill the victory conditions. So far I've found it fascinating, with events working out in a marvelously fiction-like way similar to an old Heinlein novel.

You expressed a fear of SPI doing a S-F zine. I doubt it, citing the following:

1) Of the staff of SPI, only Simonsen is into S-F with both SORCEROR and STARFORCE as design credits.
2) Simonsen already handles the bulk of the art work for all of SPI.
3) Simonsen already edits Moves

To me it looks like Simonsen is the Man, but doesn't have the time. Also consider:

1) SPI has never been much on S-F. I believe STARFORCE was done to appease popular clamor and because of dwindling titles for "straight" games.
2) Despite claims to the contrary, S-F and Moves are pretty much house organs. SPI has the bulk of wargame titles and is the acknowledged design leader, but not so with Space games. You and TSR (fantasy) are top dogs. They'd soon run out of SORCEROR & STARFORCE pieces.

Hope it alleviates your fears some. (Watch SPI announce SPACEWAR a magazine of tactic conflict next month!)

August should be a big month OUTREACH & STARSHIP TROOPERS. How I await the latter (for at least 10 years.)

Somewhere will be enclosed an order.

Take care and I hope to hear from you.

Tony Watson
Las Vegas, Nevada